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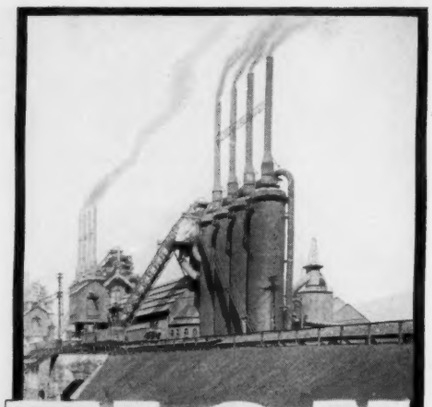
TRADE **YALE** MARK

ELECTRIC

TRUCKS

Contribute vitally important economy factors in

PRODUCTION CONTROL



Yale Tilting Fork Truck handling sheet steel in the metalworking industry

What is *Production Control?*

Briefly described, ***Production Control*** comprises planning, routing, scheduling, dispatching and inspecting functions so organized that movements of material, performance of machines, and operations of labor, however subdivided, are controlled and coordinated as to quantity, quality, time and place. (From COST AND PRODUCTION HANDBOOK)

What part do YALE TRUCKS have in *Production Control?*

YALE ELECTRIC TRUCKS constitute one of the most important factors in ***Production Control.*** They simplify the routing and regularize the flow of production from raw materials to finished product . . . they speed up the transportation of materials from warehouse to machines, from one line of machines to another in the progressive stages of production and from the final stage to shipping.

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Makers of Yale Electric Trucks, Hand Lift Trucks, Hand Chain Hoists, Electric Hoists and Trolleys.

As the Editor Views the News

AFTER all, there is only one issue before iron and steel, and that is price. It is easy to grow academic over the virtue of maintaining remunerative quotations; consumers can be pardoned for an understandable interest in trying to whittle down their costs. The theory is that genuine recovery can be stimulated only when commodities are priced at levels inducing their purchase; the practice is that steel, in the wake of heavy depression losses, can ill afford to surrender a position that has just become moderately comfortable. There is, however, one phase of the industry that will remain immune to the issue of price, and that is wages. It is safe to predict that steel—all industry in fact—will not antagonize labor and bring down a hornet's nest.

• • •

Detroit the Crucial Spot

Probably at Detroit, where a number of factors are converging, the lines will be drawn first. As automobile manufacturers near the end of runs on current models their requirements are tapering off (p. 19) and steel producers become correspondingly more eager for business. In a few weeks, manufacturers will begin assembling costs on 1936 models, and many refinements and accessories hinge upon possible economies. Just about this time, second quarter earnings reports will be released, and steelmakers will be using black ink in encouraging quantities. There is no use pussyfooting; Detroit will bear close watching.

• • •

Government By Guess

It is a happy coincidence that the annual elections for steel employe representation plans fall (p. 14) just at the time the immediate family is taking its last look at the original NRA. There is a good deal of reason to suspect that the average worker is just as glad as his employer to see the end of this official harassment. The coercion of labor racketeers has been onerous to him. Whatever his enthusiasms over employe plans, his prime concern is to earn for his family, and the wise employer is confronted with the opportunity of a lifetime to cement relationships. Undoubtedly the Wagner bill will pass, but it will face the scrutiny of nine judges unmoved by inferential criticism from high sources. The hypocrisy of passing laws that almost certainly cannot take it, legally, is being exemplified in the NRA extension act (p. 21) as well as the Wagner statute. Voluntary codes, it is believed, will not stand against the antitrust law amendment forced by Senator Borah. Government by guess and by hope may be an easy "out" politically, but it is tough on business.

• • •

Steelworks Are Safe

Keeping labor on the job is only half the battle; it must be kept safe in the plant. Last year the experience of steel was somewhat better than for all industry (p. 15). On safety, steel has done a magnificent job, and mention of a steelworks no longer connotes a hazardous place to work. On employe relations and welfare it has made comparable progress, but failed to publicize it. To this omission may be traced many of steel's pains under the new deal. It makes interesting reading (p. 35) to study the methods used by foundry departments at Midland and Garrison plants of the Mackintosh-Hemphill Co., Pittsburgh, in achieving the enviable honor positions in the National Safety council's foundry safety contest.

• • •

Decide, Then Buy

Machine tool users who rely entirely on recommendations of competing tool builders in deciding manufacturing problems are in danger of creating a situation whereby sales tactics becloud real merit (p. 40). The better method is for the prospective buyer to make his own analysis before calling in sellers . . . Along what lines may continuous slab and billet heating furnaces be improved in the future? Fewer or smaller furnaces will be required to handle present tonnage if the back end of the furnace is put to work along lines suggested (p. 30 by one authority . . . A new spray process (p.44) supplants the immersion tanks formerly required to produce a rust-resistant phosphate coating on steel as an adherent base for paint.

Edwin C. Barringer

Steel Labor at Polls as House Backs Moot Wagner Bill

OVER a quarter of million steel workers went to the polls last week to support their candidates for employe representation plans on the eve of expiration of the collective bargaining provisions—section 7a—of the national industrial recovery act.

The successful candidates will represent employes during the ensuing year in all matters concerning labor and the management. For some companies last week's election was the third, the first having been conducted in the summer of 1933. For others, it continued a policy long in effect.

In the Pittsburgh district alone nearly 100,000 men participated. As an earnest of high interest, 23,037 employes of the Carnegie Steel Co., or 86.34 per cent of the 26,632 eligible, participated.

Youngstown Sheet & Tube Co. reports that 97 per cent of its eligible employes cast ballots, this being the the highest in the 18 years the plan has been in operation in Youngstown and an increase of 5 per cent over last year, according to Frank Purnell, president.

Of the 23,515 employes of the Republic Steel Corp. who were registered, 94 per cent went to the polls.

Representation Plans Unchanged

In the Wheeling, Chicago and other leading steel districts a similar situation obtained. Apparently the demise of NRA is of no effect so far as bargaining is concerned, most plans stating that they "shall be and remain in full force and effect unless and until terminated by a vote of the majority of employes at any annual election."

Charges made last week by the American Federation of Labor that steel companies in the Chicago district had made adjustments in wages and hours and that the Wheeling Steel Corp. had increased its work day from eight hours to ten were flatly denied.

The American Iron and Steel institute reported that it contacted all producers in the Chicago district and found no deviation from code standards, while Parker F. Wilson, assistant to the president of Wheeling, pointed out that the company has pledged itself to code hours and wages "and these standards are being and will be maintained by our company."

At Washington, with NRA fading out of the picture except for its skeletonized temporary form, organized labor was concentrating on the Wagner labor disputes bill as a means of continuing the pre-eminence the administration has sought to accord it. Apparently nothing but a complete overturn of the present outlook can prevent the bill becoming law.

Already it has been passed by the senate, and last week it was favorably reported to the house by the committee on labor with no appreciable alteration of the provision most noxious to industry—that coercion of labor by employers but not by outside labor organizations be prohibited.

Debate Constitutionality

Prior to the Schechter decision by the Supreme Court it was believed that extension of NRA and section 7a would satisfy the President, but the court apparently killed this idea along with the chicken.

Industrialists contend that the Wagner bill is unconstitutional and organized labor is jittery over it, but like NRA it may take some months to obtain a decisive court decision, and in the meantime labor would continue to have the backing of Washington in its organization activity.

Attitude of the house committee on labor on collective bargaining is typified by the following comment in its favorable report on the Wagner bill:

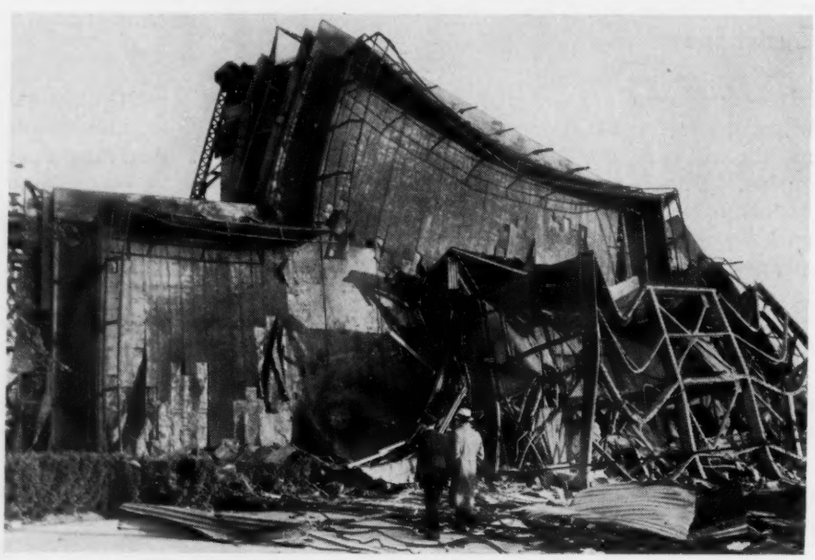
> The result of all nonenforcement of section 7a has been to breed a widespread and growing bitterness on the part of workers who feel, with much justification, that they have been granted fair words but betrayed by the government in the execution of its promises. Time after time employes who have sought to organize in pathetic reliance of section 7a have found themselves discriminated against by the employer, and appeals to the government for redress have been in vain. If such a situation is allowed to continue uncorrected, it will become a menace to industrial peace that cannot be exaggerated.

Buying Policy Holds

The bill suggested by the President to see that government contractors observe certain hour and wage provisions has not yet been introduced in either house of congress. As a matter of fact, some government purchasing officers foresee considerable difficulty with such a law.

In the meantime, the government is going ahead with its steel and other purchases much the same as usual. Last week several steel companies were asked if their bids tendered before the Supreme Court decision could stand as to price with permission for the government to

The Path . . . Leads but to the Scrap Yard



During the Century of Progress exposition at Chicago in 1933 and 1934 this was the west tower of the sky ride. Now, after a charge of dynamite, it is approximately 3100 net tons of scrap, mostly No. 1 heavy melting steel. Dynamiting was deemed the safest and cheapest means of demolition, but neighboring windows suffered. Wide World photo

waive the compliance provisions. This has been allowed in this case, but no new prices were filed. In this particular case the steel was for the postoffice department.

Safety

ACCIDENT frequency rate for the steel industry in 1934 was 7 per cent lower than in 1933, but the severity rate increased 5 per cent, states the National Safety council, Chicago. By comparison, industry as a whole increased 5 per cent in 1934 in both frequency and severity rates.

The steel industry had a frequency rate of 10.81, compared with 15.29 for all industry, and a severity rate of 2.20, against 1.70 for all industry. In the Council's list of 30 major industries, steel in 1934 ranked 12th in frequency and 24th in severity.

For outstanding safety accomplishments last year the Council cites the Corrigan, McKinney Steel Co., Cleveland, and Continental Steel Corp., Kokomo, Ind., plants among large units; the Zanesville, O., plant of the American Rolling Mill Co., and the South Chicago works of the Youngstown Sheet & Tube Co., among middle size units; and the Laclede Steel Co., St. Louis, among the smaller units.

In the sheet metal industry the 1934 frequency rate was 14.07.

Industry Glutted with Coal; Shutdown Seen Without Strike

Late Friday the President asked postponement of the soft coal strike to July 1. Mine workers' leaders were to recommend acceptance at a conference Saturday.

PITTSBURGH

UP THROUGH late last week, as the strike in the bituminous coal industry threatened, large fuel users were only mildly apprehensive of possible consequences. Leading steel companies, the railroads, and the public utilities were genuinely doubtful that a strike would come to pass, yet they covered themselves against contingencies and had fulfilled the premeditated policy of accumulating large coal and coke inventories.

Of what magnitude these stocks aggregate it is difficult to accurately state. Estimates concur, though, that they run into many millions of tons of fuel mined and lying above ground. A leading coal mining interest estimates stocks at 68,000,000 tons. So heavy are these stocks that they doubtless could suffice consumers' needs through late August or early September.

Most of the steel companies and the railroads have been guarding against the contingency of strike for some months. First, the threat was imminent when the soft coal wage and hours' agreement expired April 1. Through February and especially March, heavy accumulations were built up in the hands of consumers. At one time a leading by-product coke works is said to have piled some 350,000 to 400,000 tons of coal for coking purposes at its works in Pittsburgh, and other "captive mine" stocks were proportionate. Such stocks still exist today.

Tracks Are Filled

Railroads, too, at that time stocked up idle cars heavily, with the result that even up through last week most leading carriers still carried cars in abundance on their tracks, containing coal, that have stood idle for as long as three and four months.

However, mindful of all potentialities to the situation, many captive mines were operating their full five days weekly right up until last Friday. Steel producers are guarding against being tied up for want of coking coal and are willing to swell inventories and thus tie up considerable funds rather than accede to demands of the United Mine Workers, which they feel are unjust.

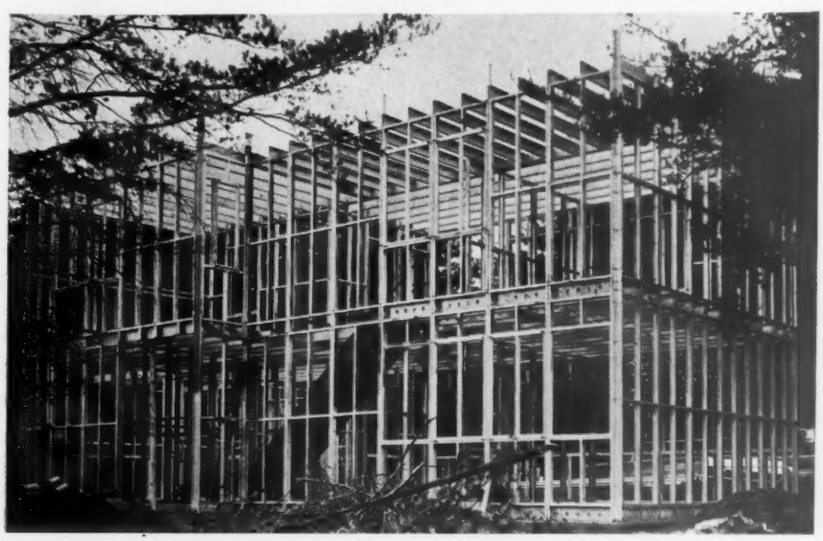
Independent coal operators up through last week were also operating on the best schedules in considerable time. One large interest in the Pittsburgh district, for example, had all of its active mines operating, and smaller producers were experiencing similar operations.

Curtailment Is Expected

Considering the heavy stocks among captive mine operators, in addition to those in the hands of consumers in the upper lake ports served by the lake trade, in the hands of railroads, and stocks by retail distributors, it is not surprising to expect that, strike or no strike, mine operations will be severely curtailed beginning this week. Likewise, coke oven operators began shutting down their ovens last Saturday. As one coal operator at Pittsburgh last week said, "If the miners don't strike on June 17, the operators will."

The present situation has serious potentialities from a price standpoint. Should the June 17 strike fail to materialize, or should a postponement be determined upon, the presence of huge stocks of coal above

Twice as Much Steel as in an Auto



This view of the steel framework of one of the Berloy steel frame houses being erected by the Berger Mfg. Co., Canton, O., in Washington gives a hint of the potentialities for steel in housing. The steelwork was erected by five men in 13 hours. Not shown because not yet installed are plumbing, heating and air-conditioning equipment, kitchen cabinets and ducts, which raise the total of steel in this house to five tons. As an indication of the flexibility of the steel frame house, the house pictured above has been altered to include a lavatory on the first floor under the stairs, a fireplace in the living room, an extension of three feet to the garage, and conversion of the 9 x 15 foot porch in the rear to a 12 x 15 foot dining room

ground, and in many cases unsold, forecasts a possible future price shading.

Seeking to avert a complete shutdown, J. D. A. Morrow, president of Pittsburgh Coal Co., which has withdrawn its support from the Guffey bill, offered a plan late last week which would require employment of union labor in the soft coal mines, also a revision in the Sherman anti-trust law, and the establishment of a federal coal commission with power to reject or approve price fixing agreements among operators of one district as well as among district groups.

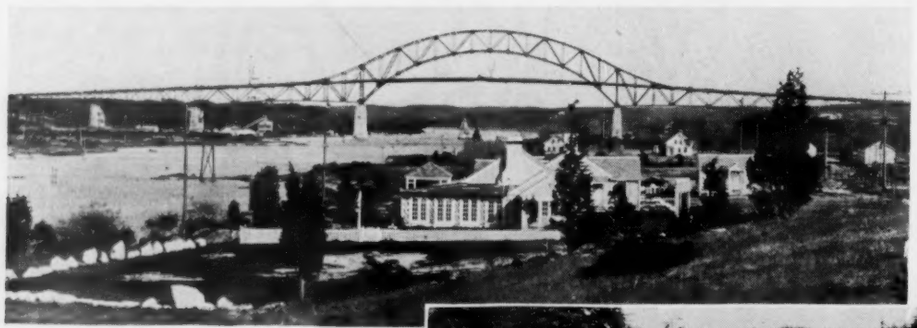
Would Melt Export Scrap at Home

HEAVY exports of steel and iron scrap from this country will be costly in the long run, will deplete natural resources and, in effect, reduce employment of workers, is the view of Barton R. Shover, consulting engineer, Oliver building, Pittsburgh.

Speaking before a recent meeting of the American Scrap Exporters' conference Ralph L. Harding, chief of the metals and minerals division of the department of commerce, stated that 1,800,000 tons of scrap were exported in 1934 and 560,000 tons during the first quarter of this year. He pointed out that practically all of this scrap went from districts too far from steel producing centers to allow shipment profitably.

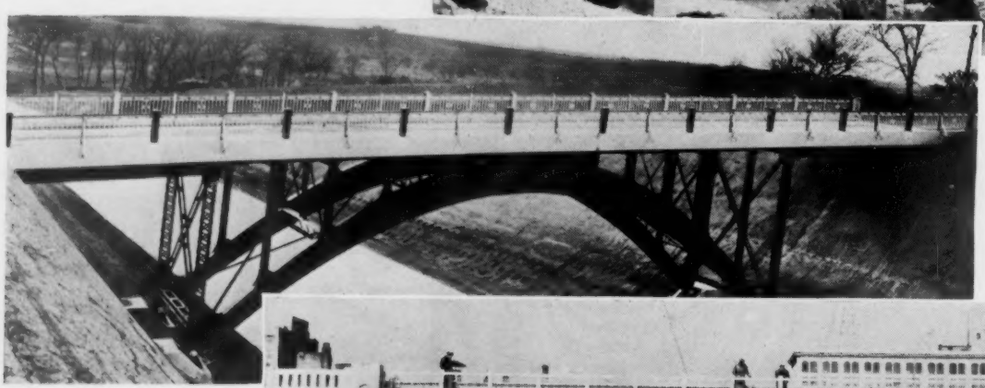
Mr. Shover believes scrap located far from large steel centers should be utilized by small steelmaking plants located where the scrap accumulates, giving low material costs. (STEEL, Oct. 15, 1934, p. 25). Ex-

Beautiful Bridges, Prize Winners, Feature Economy of Design

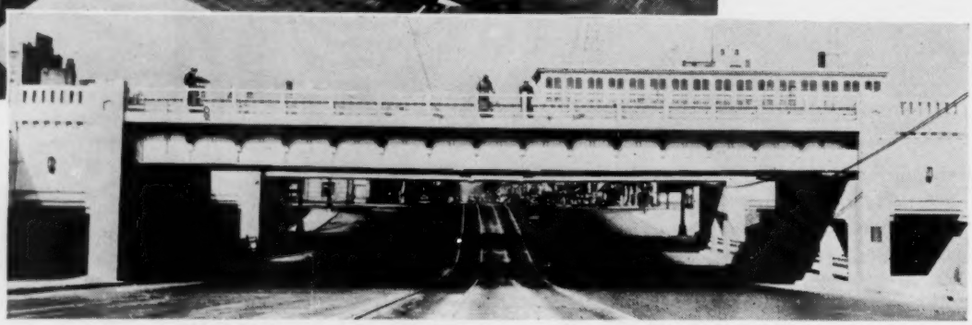


Left, Bourne bridge, Cape Cod canal, Bourne, Mass., winner of class A contest for long spans. Below, honorable mention, class C, Eel river bridge, Smith Point, Humboldt county, California

IN awarding stainless steel plaques for the most beautiful bridges built in 1934, the American Institute of Steel Construction's jury states the prize designs were projected about 1932-33, the low point of the depression, and therefore typify a new spirit of economics in bridge construction



Below, honorable mention, class B, Michigan Central and Grand Trunk grade elimination bridge, over Woodward avenue, Detroit



Above, first prize for class C, small bridges, Douglas county bridge, Omaha

ports at the present rate this year will necessitate use of 4,605,000 gross tons of iron ore, 3,504,000 tons of coal and 1,226,000 tons of limestone to make steel that could have been produced from the exported scrap, utilizing American labor. Mr. Shover concludes:

"Had Japan, Italy or the other importers of this scrap been unable to procure it, they would have been forced to buy steel from steel producing countries and although comparatively little of it might have been purchased in this country, the total world requirements would have been increased by that amount and would have thus given local steel producing companies at least an opportunity to export finished products. The cost of the raw material to replace this steel would be very much in excess of what was received for the sale of the scrap and in addition it can be assumed that some of the steel would have been sold at a profit or would have at least given employment to local labor.

Holds Labor Was Aided

"Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel Inc., stated that scrap exported last year had added over $4,000,000 to the payroll of the United States and was therefore of material benefit to labor in this country. If this scrap were made into steel in the districts from which it was exported, not only would the scrap industry have employed the same labor in assembling it, but in addition, more labor, much of it skilled, would have been required in the making and rolling of steel.

"It is not claimed that these suggested small works would be able to produce steel at quite as low costs as is now possible in large mechanized works, but a careful study of the conditions in nearly all the districts from which this scrap was obtained shows that small steel works located in them could produce rolled steel at a cost sufficiently lower than that market price to result in good returns on the investment required.

"It may be selfish to take this view, but why should the United States not take advantage of the opportunity to utilize all of its resources, including scrap, to the best good of the country?"

Institute

DIRECTORS of the American Iron and Steel institute last week postponed their regular monthly meeting, originally scheduled for June 13, to June 19. Inasmuch as postponements are not infrequent, often hinging upon the inability of some members to be present, no particular significance is being attached to the change in the date this month.

To reports current in Washington last week that important steel companies might form a general sales organization under the Institute, the Institute last week unofficially entered a denial.

Slattery Heads Electroplaters

THOMAS F. SLATTERY, United States bureau of engraving and printing, Washington, was elected president of the American Electro-Platers' society at the twenty-third annual convention of the organization in Bridgeport, Conn., June 10-13. He succeeds H. A. Gilbertson, 434 South Wabash avenue, Chicago.

Joseph E. Underwood, C. H. Hunt Pen Co., Philadelphia, was named first vice president, and Patrick Sheehan, Cutler-Hammer Inc., second vice president.

The present secretary-treasurer of the association, E. Steen Thompson, Hays Mfg. Co., Erie, Pa., was re-elected, and W. J. R. Kennedy, Westinghouse Electric & Mfg. Co., Springfield, Mass., was chosen editor.

The steady growth and development of the electroplating industry was indicated by the heavy registration for the convention, more than 500 attending the technical and business sessions. Attendance at the first exhibition of materials, equipment and apparatus used in plating held in connection with the sessions was large. Finished products, plating solutions in actual operation and working exhibits were included.

A report of the joint committee recommending standard tentative specifications for various types of electro-deposited coatings on steel and other metals was accepted. These specifications are the result of research by a committee of the Electro-Platers' society co-operating with the American Society for Testing Materials and the national bureau of standards.

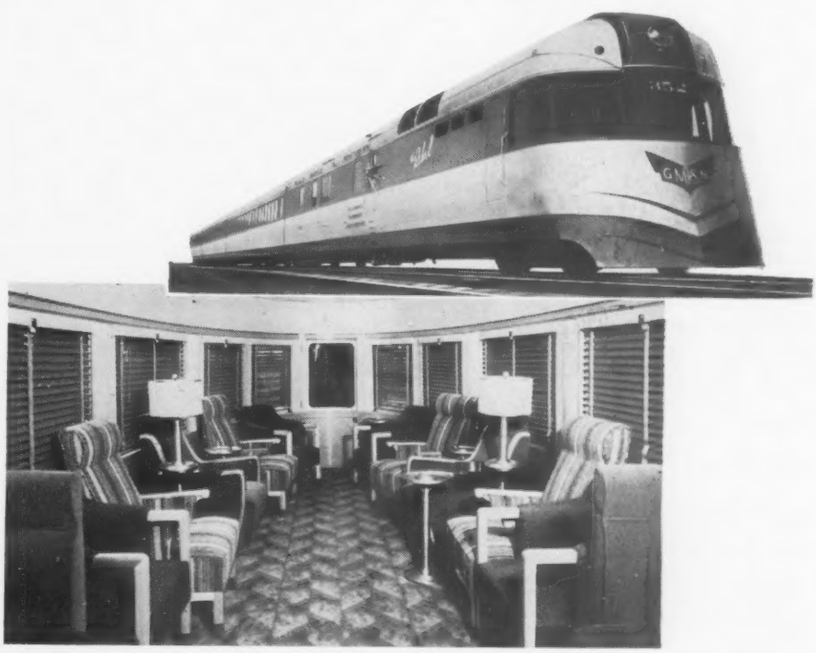
The report of technical sessions of the convention will be presented in the June 24 issue of STEEL.

Merger

FORMAL decree against the department of justice in its suit to prevent the acquisition of the Corrigan, McKinney Steel Co., Cleveland, by the Republic Steel Corp., Youngstown, O., was officially filed by stipulation by Judge Fred M. Raymond in Grand Rapids, Mich., June 14.

Whereas it has been generally

The Rebel—Coming and Going



Here comes The Rebel, first streamlined train designed for regular service in the South, heading from the American Car & Foundry Co.'s plant at Berwick, Pa., for the Gulf, Mobile & Northern run between New Orleans and Jackson, Tenn. There are two editions of The Rebel, each with three cars, and an additional coach for set-out service. Built of Cor-Ten steel, spotwelded to eliminate all outside bolts and nuts, the cars are mounted on separate sets of trucks. The traction motors receive their power from a 660-horsepower Alco-type McIntosh & Seymour diesel engine. The four-car train will seat 152 people in day coaches and lounge, and is completely air conditioned. Entrance vestibules are in the center of the coaches, steps and doors folding flush into the sides of the train

thought that the 60 days during which the department can file an appeal dated from May 3, when the opinion first was rendered, the fact is this period begins with last Friday and expires Aug. 13. The department gives no indication of its intention.

The decree is a sweeping victory for Republic and clears the way to this merger, under consideration since last fall, except for the possibility of an appeal.

Financial

NATIONAL STEEL CORP.'S $50,000,000 first collateral mortgage sinking fund bonds 4 per cent series due June 1, 1965, have been approved for listing by the governing committee of the New York stock exchange. The same body has approved listing of American Rolling Mill Co.'s $25,000,000 ten year 4¼ per cent convertible debentures and 1,000,000 additional shares of common stock at $25 par value.

SPANG PAYS $1 ON PREFERRED

Spang, Chalfant & Co. Inc., Pittsburgh, has declared a dividend of $1 on the 6 per cent preferred stock on account of accumulations, payable July 1 to June 18 record. On April 1 a dividend of 50 cents was paid.

BYERS REDUCES DEFICIT

A. M. Byers Co., Pittsburgh, reports net loss of $197,779 after all expenses in the quarter ended March 31. This compares with net loss of $220,230 after similar charges in the fourth quarter of 1934, and net loss of $183,902 in the March quarter of 1934.

Bethlehem Steel Corp. has filed a registration statement with the securities and exchange commission, Washington, on $55,000,000 of consolidated mortgage, 25-year sinking fund 4¼ per cent bonds.

Four New Officers Picked To Head Founders' Society

Directors of the Gray Iron Founders' society, unanimously elected at the meeting of the industry at Hotel Gibson, Cincinnati, June 7 (STEEL, June 10, p. 17), proceeded to elect new society officers, with results as follows:

President—C. B. Magrath, president, North Western Foundry Co., Chicago.

Vice president—Ronald E. Kucher, manager, Olympic Foundry, Seattle.

Secretary—W. H. Cole, president, Moore Bros. Co., Elizabeth, N. J.

Treasurer—Walter L. Seelbach, secretary-treasurer, Forest City Foundries Co., Cleveland.

Production

FOR the fourth consecutive week steelmaking declined last week, off 2 points to 39 per cent and the lowest level for the year to date. Losses in the Youngstown, Chicago, Cleveland, Buffalo and Birmingham districts were largely responsible for this reduction. Although the automobile situation is seasonally strong, releases for steel are tapering off. Details follow:

Pittsburgh—Unchanged at 32 per cent, the leading interest closing the week at 28 to 30 per cent, and the leading independent operating at 36 per cent. A decline to probably 30 per cent is expected this week, due to the fact that a grouping of orders occurred in many local plants last week in order to have full mill forces on hand for employe representation primaries and elections. Twenty-one out of 60 steelworks blast furnaces continue in blast.

Central eastern seaboard—Fractionally higher at 30 per cent, due in a measure to added bessemer production for the rolling of rails. There also continues the production of ingots for stock, which partially accounts for the present rate in the face of reduced new buying of finished steel. One plant noted last week as suspending steelmaking entirely now has one furnace on. Another producer has four active, as against three previously, although it appears that one will be taken off shortly.

New England—Held at 60 per cent last week, with schedules planned for this week indicating little change.

Cleveland-Lorain—Down 3 points to 51 per cent, National Tube Co., Lorain, taking off one open hearth to operate nine; Corrigan, McKinney Steel Co. continuing with seven, and Otis Steel Co., four.

Birmingham—Off 22 points to 30½ per cent last week, due chiefly to completion of rail rolling and closing of the Ensley works of the Tennessee Coal, Iron & Railroad Co.

Chicago—Down 2 points to 41 per cent. Most producers held output unchanged, but further slight recessions are in prospect for the next several weeks. More than the usual seasonal rebound is looked for this fall, which may first begin to make its appearance late in July. Blast furnace activity holds with 14 of 36 stacks blowing.

Detroit—Stationary at 94 per cent, one producer operating all eight and another eight of nine.

Buffalo—Down 2 points to 35 per cent last week, with 13 out of 38 open hearths in production.

Youngstown—Off sharply to 42 per cent, a loss of 6 points, due in large part to the Ohio works of Carnegie dropping three open hearths, and Republic taking off two at Warren, O., leaving four on.

Wheeling—Unchanged at 48 per cent. Eighteen out of 37 open-hearth furnaces in four district plants are actively making steel.

MAY TOTAL UP; LONGER MONTH

Finished steel shipments of the United States Steel Corp. in May increased 7187 tons over April, the May total being 598,915 tons, compared with 591,728 tons in April. In May, 1934, shipments were 745,063 tons. For five months of 1935 the cumulative total is 2,975,891 tons, compared with 2,693,558 tons for the corresponding period of 1934.

ISSUE STANDARD FOR AXES

A simplified practice recommendation for forged axes has been developed by the national bureau of standards, working in co-operation with the General Tool and Implement association, and is being submitted to the industry for consideration.

Steelmaking Operations

Percentage of Open Hearth Ingot Capacity Engaged in 10 Leading Districts

	Week ended June 15	Change	Same week 1934	Same week 1933
Pittsburgh	32	none	56	36
Chicago	41	—2	70	45
Eastern Pa.	30	+½	46½	28½
Youngstown	42	—6	66	52
Wheeling	48	none	81	84
Cleveland	51	—3	77	80
Buffalo	35	—2	58	37
Birmingham	30½	—22½	55	50
New Engl'd	60	none	70	71
Detroit	94	none	82	38
Average	39	—2	62	49

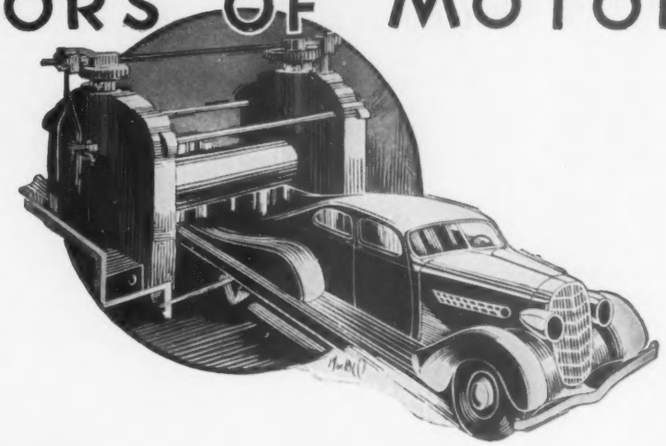
U. S. STEEL CORP. SHIPMENTS

(Inter-company shipments not included)

(Tons)

	1935	1934	1933	1932
Jan.	534,055	331,777	285,138	426,271
Feb.	583,137	385,500	275,929	413,001
March	668,056	588,209	256,793	388,579
April	591,728	643,009	335,321	395,091
May	598,915	745,063	455,302	338,202
5 mo.	2,975,891	2,693,558	1,608,483	1,961,144
June		985,337	603,937	324,746
July		369,938	701,322	272,448
Aug.		378,023	668,155	291,688
Sept.		370,306	575,161	316,019
Oct.		343,962	572,897	310,007
Nov.		366,119	430,358	275,594
Dec.		418,630	600,639	227,576
Yrl. adj.		19,907	44,283	5,160
Total		5,905,966	5,805,235	3,974,062

MIRRORS OF MOTORDOM



DETROIT

WELL, if the country is going back to the horse and buggy era, as President Roosevelt fears, someone ought to warn the automobile industry. Happy in its ignorance it plugged along last week, assembling 90,788 units—which is not bad for the season—and accelerating preliminary work on 1936 models.

In fact, the industry may surprise the country and turn out an exceptionally-large number of cars during the normally-dull summer months, notwithstanding the strong first half year and the fact that advancing the New York show to Nov. 2 automatically chops several months off the 1935 selling season.

In general, market studies are heartening. The NRA decision appears to have clarified the atmosphere everywhere. Labor, even in turbulent Toledo, is settling down and realizing that it has lost its mandate to strike, and this augurs well for retail buying. There are many who continue to believe that forces for recovery which have been gathering strength for some months will break through shortly.

Pilot Runs Approaching

Thus, going into the final days of the first half year, the automotive situation appears to be shaping up something like this:

> Excepting Ford and one or two divisions of Chevrolet, automobile manufacturers generally are just about maintaining their May gait. Many plan to start pilot runs on 1936 models about the middle of August. From now on, production of current series will be keyed closely to actual retail sales, schedules will be made up from week to week, materials and parts will be released in small lots as required. July and at least part of August will be a hand-to-mouth proposition, but probably satisfactory in the aggregate. In event retail demand is brisk in mid-August, 1935 models may be kept on the line longer than expected and a start on new stuff deferred, but with October the deadline.

Over the retail market hangs one serious cloud—the glut of used cars. Ford dealers, having sold by far the greatest number of new cars, have no small part of their profits standing on used car lots. With Dearborn crowding cars on dealers in old-fashioned style, some Ford dealers are offering even longer trades now that the retail automobile code is dead. Chevrolet dealers are more generous than they were, but their enthusiasm is restrained by their inability to get new cars.

Developments in Wheels

Ford is understood to be planning tentatively to keep the present V-8 series on the line until Aug. 15; any extension depends upon the state of retail demand at that time. Last-minute decisions notoriously upset any predictions concerning Ford, but the present prospect is for no marked change for 1936.

For one thing, Ford is going to a pressed steel wheel, stamped from strip steel, and at this stage of development resembling the present equipment on Olds. The blank for the hub cap probably will be 16 inches in diameter; it has not yet been decided whether the cap will be stainless steel with a larger V-8 emblem than on the present caps, or whether the center will be bright, surrounded by a band of black and then an outside beading of stainless or chrome plated brass.

This will write finis to wire wheels. Chevrolet now mounts pressed steel wheels on four master deluxe jobs and offers them on other master models at $5 extra per wheel. Presumably if Ford goes to the new type, as expected, Chevrolet will switch over on all models. This suggests a retooling program of fair size both at Ford and Chevrolet.

At present, Ford owners can obtain for $85 extra five General Jumbo air wheel tires with pressed steel wheels. For an additional $15.75, strips are provided filling the space between the rim and the bug, giving the effect of disk wheels.

With Lincoln preparing to offer an all-steel top on its new medium-price V-12, it is reasonable to expect such a development for the 1936 Ford, although there are no indications yet at the Rouge plant of anything more than test tops. However, Briggs, which will make the Lincoln tops, is getting equipped, and Ford has several presses large enough for such a draw. Incidentally, just try to get inside the pressed steel building at the Rouge; it can't be done, and is a certain sign of change.

Speaking of the forthcoming smaller Lincoln, the field for these low price editions of fine cars threatens to become congested. LaSalle, it will be recalled, dropped down there with its straight eight two years ago. Packard joined the procession this year with its straight eight; Lincoln is expected within 60 days with its new V-12, and certain experimental work at Cadillac on a small V-8 looks suspicious.

Sales Dictate Trends

For some of the logic behind forthcoming radical changes in design for 1936, consider certain production statistics for 1935 through June 15. In this period, ended last Saturday, Ford has produced about 747,000 units, Chevrolet 480,000, Plymouth 242,000. Even with all its subsidiaries included, General Motors has made only 715,000 cars and trucks—still short of Ford. And all Chrysler jobs put together total only 445,000. It has been a runaway year for Ford.

Last Thursday the 2,000,000th V-8 was run off the line. It was approximately the 23,000,000th Ford ever built, and also made 1,000,000

Fords to be turned out in the past year—in 6 days less than a year, to be exact.

The showing of Plymouth probably is a fair indication of its relative strength; like Ford, it got away to an early start and suffered no strikes or other production handicaps. Chevrolet, on the other hand, lost the equivalent of a month in getting the all-steel turret top into quantity production, and the strike at Toledo and some assembling plants cost it three to four weeks more. For that reason, General Motors is philosophical about the situation.

Nevertheless, it is an earnest that General Motors is going to do things in 1936. Under the leadership of President McCuen, Olds two years ago threw tradition and conservatism to the winds, and it has gone places. Pontiac this year benefited from the experience of Olds, and now it too has a large expansion program under way. Incidentally, Fisher Body at both Lansing and Pontiac is reported to be a hot prospect for manufacturers of conveying equipment.

This year, Ford dealers were able to go to owners of 1934 and previous model Fords and offer them something brand new. The clincher was the tender of a job, easily distinguished from earlier Fords, for the old car plus only several hundred dollars—and that on time. This more than anything else has rolled three quarters of a million V-8s off the line this year.

Appearance Magic Key

On the other hand, Chevrolet dealers have been handicapped by an unchanged radiator grille and comparatively few changes in hood and body lines. There has not been enough difference between the 1935 and the 1934 Chevies to induce last year's buyers to trade. Notwithstanding the all-steel top, a fine performing engine and sound claims for economy and performance, Chevrolet has lacked the appeai that prompts changing.

But that will be changed in the 1936 line. The present standard Chevrolet is undergoing as complete an overhauling as Olds and Pontiac, and the master is next. The revised standard ought to be ready by fall; a material buy for 80,000 master units indicates this series will be kept in production for some weeks.

This redesign of Chevrolet has revived rumors of an 8-cylinder engine. Experimental work, of course, has included development of a straight eight. At this time, however, the preponderance of logic is against such a change.

If Chevrolet's poor showing alongside Ford were traceable strictly to market conditions, then the six might be considered passe, but since there have been so many complications in production there is no proof that the public is completely won over to the low-price eight.

Chevrolet has committed itself rather completely to a six in its advertising on the ground of economy in operation and servicing. This, however, is no insuperable hurdle; after General Motors plugged for the V-8 type it dropped a straight eight into the Buick chassis some years ago without batting an eye. Chevrolet, of course, is not discussing plans for 1936 at this time, but at the moment betting odds would be against a shift to an eight.

Buick, like Chevrolet, is undergoing a transformation. Last week the contract was let for the hood sides. The larger models not having been changed much last year, they will probably be the first new General Motors cars to be introduced; at this time August is discussed.

New Cars in August

Olds has been planning to shift from 1935 to 1936 series about Aug. 10, and since there will be comparatively few changes, without much delay. Pontiac, which is making a change in its rear fenders, also expects to change over in August. LaSalle already has its 1936 line out. Cadillac has new models scheduled for fall, possibly inciuding the small job previously mentioned.

Last week, when it assembled about 30,000 cars and trucks, Chevrolet passed Ford production for the first time this year. Ford, operating two shifts a day, five days a week, is assembling about 25,000 jobs a week. Chevrolet is far from caught up with its backlog of orders, despite the fact its dealers have had to refund many deposits.

The question appears to be whether it is the more desirable to be a Ford dealer, to have sold many cars and have the profit tied up in used cars, or to be a Chevrolet dealer and have had comparatively few cars to deliver.

Sellers of iron and steel are not mentioning price any oftener than they have to, and so far as can be determined, no large-scale buyer has yet exerted what might be termed pressure, yet both sides recognize that they are approaching a crisis.

To Turn on the Heat?

At the moment, even though the automobile situation is seasonally strong, releases are tapering off and the mills naturally are anxious for tonnage. On the other hand, in several weeks automobile manufacturers will begin to compute costs on 1936 models; they not only will seek a level that should hold through the model year but they also are confronted with decisions on refinements which depend upon any saving out of material costs.

One important maker of special steel is instructing its salesmen to put over the point that while prices the past two years have been administered under a code, nevertheless these prices were producers' prices and not code prices.

The steel salesman whose lot is hard is the one who during the past two years has met requests for concessions with the excuse that his company would like to grant them but was prohibited by the code. Now that the code is out, this alibi may react.

Automobile Production

Passenger Cars and Trucks—U. S. Only
By Department of Commerce

	1933	1934	1935
Jan.	128,825	155,666	292,817
Feb.	105,447	230,256	335,699
Mar.	115,272	338,434	429,834
Apr.	176,432	352,975	477,716
May	214,411	330,455	*425,000
5 Mo.	740,387	1,407,786	*1,961,066
June	249,727	306,477	.....
July	229,357	264,933	.....
Aug.	232,855	234,811	.....
Sept.	191,800	170,007	.....
Oct.	134,683	131,991	.....
Nov.	60,683	83,482	.....
Dec.	80,565	153,624	.....
Year	1,920,057	2,753,111	.....

*Estimated.

Estimated by *Cram's Reports*

Week ended:	
June 1	65,675
June 8	87,755
June 15	90,788

New Uses for Steel

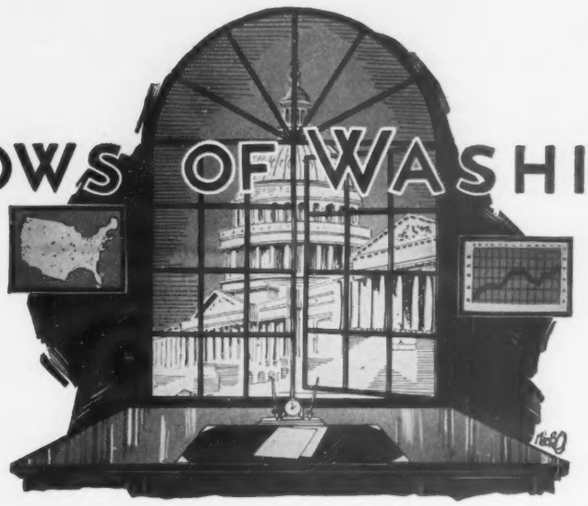
SINCE development of tin plate for beer containers (STEEL, Feb. 25, page 36) a leading eastern producer has been making as many as 9000 containers daily to this specification.

Tin plate for this use involves a considerable saving in weight compared with glass bottles, and packed in a fiber case 24 pint beer containers made of tin plate are about half the total weight of the conventional beer case of wood and 24 glass pint containers.

Furthermore, the tin plate containers are considerably easier for the individual to carry and tin plate for beer is not opaque, therefore maintaining contents at an even temperature and under undisturbed chemical conditions.

A recent interesting sidelight has been the growing popularity of tin plate beer containers in certain steel mill communities. Many steel mill employes have been requesting beer delivered to them in this form, being cognizant of its advantages.

WINDOWS OF WASHINGTON



WASHINGTON

AFTER months of work congress at last has passed an NRA extension bill until April 1 of next year—but far from what was expected and only after Huey Long had talked for 15½ hours continuously on the floor of the senate on a one-man filibuster.

The Kingfish was trying for an all-time record of talking but fell short of it, for on May 29, 1930, Senator LaFollette, father of the present senator, talked on a currency measure for 18 hours and 23 minutes with no help at all. Therefore, after all the waste of time, the senator from Louisiana didn't accomplish anything.

During the past week there has been much more going on "behind the scenes" than has been obvious to the casual observer, and there was serious question at one stage of the game last week if anything at all would be done about NRA.

As a matter of fact, the resolution only passed the senate with the Borah amendment, which is simply just including the words "including the antitrust laws," but they are said to mean more probably than all of the rest of the resolution put together and in the opinion of many, including Donald Richberg, will prevent voluntary agreements or codes.

Brevity Is Striking

As the resolution passed congress and as it finally reads it is as follows in full; resolved,

"That section 2 (c) of title I of the national industrial recovery act is amended by striking out 'at the expiration of two years after the date of enactment of this act' and inserting in lieu thereof 'on April 1, 1936.'

"Sec. 2. All the provisions of title I of such act delegating to the President to approve or prescribe codes of fair competition and providing for the enforcement of such codes are hereby repealed, provided: That the exemption provided in section 5 of such title shall extend only to agreements and action thereunder (1) putting into effect the requirements of section 7a including minimum wages, maximum hours, and prohibition of child labor; and (2) prohibiting unfair competitive practices which offend against existing law, including the antitrust laws, or which constitute unfair methods of competition under the federal trade commission act, as amended."

During the course of the past week there was considerable discussion on the floor of both houses of congress on the question of the Sherman law and its relation to the proposed NRA. This was particularly true in the senate where Senator Borah made Senator Harrison of the finance committee and other administration leaders jump through the hoop in setting forth very plainly just what they thought industry could and could not do with voluntary codes.

Emasculation Complete

It is said that it was because he was not at all satisfied with these answers that he insisted on his modifying amendment being adopted by the senate before the resolution was finally passed by that body. Mr. Borah seems to be entirely satisfied that under the resolution, as it finally becomes law, it is perfectly harmless and that industry won't be able to do anything under it. That is probably the only reason he finally allowed its passage without helping Senator Long.

Mr. Richberg stated at a press conference on last Thursday that he believed the Borah amendment to the NRA extension resolution would militate against voluntary codes. As a matter of fact, he has not said much but has intimated plenty that he does not believe that voluntary codes or agreements will be a success.

He said, on the same subject—that of voluntary codes—that he does not believe that interstate compacts are going to be of any help; they set forth, he stated, too many difficulties.

While at the time this is written nothing definite has been made public as to the future of the NRA organization, Mr. Richberg stated that there should be a study of the business experience which has come into the open through the past two years of NRA, that the organization should study the Sherman law problem and that the question of distribution costs could very well be studied—and this in spite of the fact that Secretary of Commerce Roper has already asked $5,000,000 for such a study.

One of the by-products of the Supreme Court decision invalidating NRA, by the way, is the legal opinion that everything done in the past two years contrary to the letter of the antitrust laws constitutes a liability to action. There is, of course, no suggestion that the new deal will move against industry, but the fact is the antitrust laws were not repealed, they were merely suspended with NRA as a shield, and, legally speaking, codes have never had any existence and hence there has been no actual immunity against them.

PRESIDENT SAID TO BE LUKEWARM ABOUT FTC

While the federal trade commission has come in for a large amount of comment since NRA was declared unconstitutional, it is known that all of this comment would have caused more stir in the administration except for the fact that the President is said to have a reservation about that body. Just why this should be cannot be learned, because it came into being when he was assistant secretary of the navy, under the Wilson administration.

Be that as it may, the commission is receiving all kinds of requests from industries as to its procedure for trade practice conferences.

As a matter of fact, under this

procedure the trade commission does advise industry what it considers unfair trade practices but it will not state what it considers fair practices. The commission has always felt that it had authority to give opinions on the one and not on the other.

Bills have been introduced in both houses of congress which would grant the commission greater authority for trade practice conferences, but hearings have not yet been held and it seems doubtful if anything will be done in that direction at the present session of congress.

PROPOSE BUSINESS ACTIVITY CENSUS; COST $9,370,000

The division of applications and information of the work relief program has announced an application for an allotment of $9,370,000 by the bureau of the census for making a census of all business activities in the United States. The census would be based on the calendar year 1935, and it is proposed to start the work Jan. 1 next.

The census would obtain basic information relating to the number of operating units, employment, payrolls, receipts, and other data for all business enterprises. This data would be of value, it is explained, for administrative purposes for federal, state and local agencies and by financial, industrial and commercial organizations, particularly in connection with sales promotion, marketing research, commercial credit, and analysis of cost in relation to volume and type of business. The data would be of value also, it is stated, in developing plans for business recovery and expansion.

"A complete statistical picture of economic activities which together may broadly be designated as 'American business' has yet to be drawn," the department of commerce explains in its application.

FOR CENTERING ROAD WORK IN BIG UNEMPLOYMENT AREAS

The division of applications and information of the national emergency council has announced that advance information for use in planning programs for the elimination of hazards at railroad grade crossings has been forwarded to state highway departments by the bureau of public roads.

The state highway departments have been advised that the $200,000,000 allocated for grade crossings may be used for projects without limitation as to location except that not less than 25 per cent of a state's apportionment shall be applied to crossings with secondary or feeder roads. These are defined as those roads or streets not on the federal aid system or its extension through cities.

It is thought that this provision will permit the selection of projects entirely with respect to relative traffic hazards and the possibility of providing employment in areas where relatively large unemployment exists.

New regulations will require that 90 per cent of the persons employed on any project shall be obtained from relief rolls and all projects will be measured for approval on a basis of $1400 total expenditure for labor, materials and incidentals per man per year, or on a basis of 40 per cent of the total cost, including cost of property, to go to labor directly employed on the project.

HOUSING FUNDS AVAILABLE FOR MACHINERY, EQUIPMENT

It would seem that a new market is open to machine tool and other machinery manufacturers through enactment of the amendment to the federal housing act providing loans of $50,000 instead of $2000 for modernization. This type of credit has now been extended for additions, alterations, repairs and improvements for "real property * * * of manufacturing or industrial plants."

Purchase and installation of machinery and equipment in this type of property are eligible for modernization credit under the new regulations of the federal housing administration provided they are "peculiarly adapted to the business conducted therein or necessary to the operation thereof."

How States Fare in Grade Crossing, Road Allotments

Of the $4,000,000,000 work relief program, $200,000,000 has been allocated for highways, roads and streets, and a like sum for grade crossing eliminations, as follows in dollars:

State	Highways, roads, streets	Elimination grade crossings	Total
Alabama	4,151,115	4,034,617	8,185,732
Arizona	2,569,841	1,256,099	3,825,940
Arkansas	3,352,061	3,574,060	6,926,121
California	7,747,928	7,486,362	15,234,290
Colorado	3,395,263	2,631,567	6,026,830
Connecticut	1,418,709	1,712,684	3,131,393
Delaware	900,310	418,239	1,318,549
Florida	2,597,144	2,827,883	5,425,027
Georgia	4,988,967	4,895,949	9,884,916
Idaho	2,222,747	1,674,479	3,897,226
Illinois	8,694,009	10,307,184	19,001,193
Indiana	4,941,255	5,111,096	10,052,351
Iowa	4,991,664	5,600,679	10,592,343
Kansas	4,994,975	5,246,258	10,241,233
Kentucky	3,726,271	3,672,387	7,398,658
Louisiana	2,890,429	3,213,467	6,103,896
Maine	1,676,799	1,426,861	3,103,660
Maryland	1,750,738	2,061,751	3,812,489
Massachusetts	3,262,885	4,210,833	7,473,718
Michigan	6,301,414	6,765,197	13,066,611
Minnesota	5,277,145	5,395,441	10,672,586
Mississippi	3,457,552	3,241,475	6,699,027
Missouri	6,012,652	6,142,153	12,154,805
Montana	3,676,416	2,722,327	6,398,743
Nebraska	3,870,739	3,556,441	7,427,180
Nevada	2,243,074	887,260	3,130,334
New Hampshire	945,225	822,484	1,767,709
New Jersey	3,129,805	3,983,826	7,113,631
New Mexico	2,871,397	1,725,286	4,596,683
New York	11,046,377	13,577,189	24,623,566
North Carolina	4,720,173	4,823,958	9,544,131
North Dakota	2,867,245	3,207,473	6,074,718
Ohio	7,670,815	8,439,897	16,110,712
Oklahoma	4,580,670	5,004,711	9,585,381
Oregon	3,038,642	2,334,204	5,372,846
Pennsylvania	9,347,797	11,483,613	20,831,410
Rhode Island	989,208	699,691	1,688,899
South Carolina	2,702,012	3,059,956	5,761,968
South Dakota	2,976,454	3,249,086	6,225,540
Tennessee	4,192,460	3,903,979	8,096,439
Texas	11,989,350	10,855,982	22,845,332
Utah	2,067,154	1,230,763	3,297,917
Vermont	924,306	729,857	1,654,163
Virginia	3,652,667	3,774,287	7,426,954
Washington	3,026,161	3,095,041	6,121,202
West Virginia	2,231,412	2,677,937	4,900,349
Wisconsin	4,823,884	5,022,683	9,846,567
Wyoming	2,219,155	1,360,841	3,579,996
Dist. Columbia	949,496	410,804	1,360,300
Hawaii	926,033	453,703	1,379,736
Eng. and Adm. Reserve	5,000,000	4,000,000	9,000,000

Labor

EMPLOYMENT in the iron and steel industry totaled 424,623 in April, against 425,189 in March, and 431,086 in April, 1934, according to the American Iron and Steel institute. Total payrolls in April were $45,890,244, compared with $46,764,185 in March, 1935, and $45,471,878 in April, 1934. Workers averaged 34.2 hours in April and 65.9 cents per hour.

FEDERAL OFFICIAL WARNS OF SKILLED LABOR SHORTAGE

"While millions of young men are walking the streets in quest of work, industry everywhere is calling for skilled labor, of which there is an appalling shortage. Industrialists right here in Chicago are wondering what they would do if business were suddenly to improve even as much as 10 per cent." Such was the statement of R. V. Billington, United States department of education, before a conference of Illinois supervisors of industrial training in Chicago recently.

SHEET, STRIP WAGES HOLD

Wages in sheet and strip mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be unchanged at 15 per cent above base for May and June. The bimonthly settlement in Youngstown last week showed 2.65c per pound as the average sales price of Nos. 26, 27 and 28 gage black sheets in March and April, the same as in the preceding two months.

STEEL WAGES AVERAGE $22.54

Steel industry employes paid on an hourly, piecework or tonnage basis averaged $22.54 a week in the first quarter, or 22 per cent more than the $18.46 in the first quarter of 1934. Average hours worked per week were 34.3, against 31.5 a year ago.

¶Marked demand for machinists and other metal trades workers is reported in Seattle, especially from small plants.

Industrial Men in the Day's News

Ralph W. Kempsmith, Assistant Manager of Sales, Cleveland District, Bethlehem Steel Co.

Among the most popular of the younger steel sales executives, he has served in Cleveland since 1920.

In previous associations he held posts of designing engineer, road engineer and erection superintendent.

He has been active in Pittsburgh and New York sales offices of Bethlehem, and in the bar division.

RALPH W. KEMPSMITH, just appointed assistant manager of sales in the Cleveland district for the Bethlehem Steel Co., has been associated with the company since 1914.

Born in Bethlehem, Pa., in 1888, he was graduated from the public schools in that city, and from Lehigh university with the degree of mechanical engineer, 1911.

His first occupation was designing engineer for the Link-Belt Co., at Philadelphia. Then he was road engineer for the Gas Improvement Co., Philadelphia, and next, erection superintendent for the American Foundry & Construction Co., Pittsburgh.

He joined Bethlehem as a salesman in the Pittsburgh district. Then followed an assignment as salesman in the New York district, and salesman in the bar division at Bethlehem. He was transferred to Cleveland in 1920, to which office he has been attached ever since.

When Bethlehem acquired Lackawanna Steel Co. in 1922, John C. Chandler, a veteran salesman in the iron and steel industry, became manager of Bethlehem's Cleveland office, and Mr. Kempsmith has served continuously since as his assistant, having wide sales experience, and being among most popular of the younger iron and steel executives in northern Ohio.

In 1918 and 1919 he was a first lieutenant in the gun division of the war department. He has two children, and lives in Shaker Heights, Cleveland.

Mr. Kempsmith is a nephew of the Frank Kempsmith, who founded the Kempsmith Milling Machine Co., Milwaukee.

♦ ♦ ♦

J. W. Carpenter, Cleveland district sales manager for the Otis Steel Co., Cleveland, has resigned.

♦ ♦ ♦

Alex P. McClure, for the past 10 years associated with the sales department of Semet-Solvay Corp. in Detroit, handling sales of metallurgical coke, has again taken up the sale of silvery iron, bessemer ferrosilicon and speigel manufactured by the Jackson Iron & Steel Co., with offices at 634 Buhl building, Detroit.

♦ ♦ ♦

E. D. Wacker has been appointed assistant general sales manager of C. J. Tagliabue Mfg. Co., Brooklyn, N. Y., manufacturer of temperature, pressure, flow, humidity, time and level instruments. He has been with the company 11 years, as manager of the Pittsburgh territory and more recently as division sales manager in charge of Snapon controller sales for domestic refrigerators. R. A. Skinner succeeds Mr. Wacker in charge of the latter division.

♦ ♦ ♦

O. W. McMullan, for the past 18 months chief metallurgist of the Timken-Detroit Axle Co., Detroit, is now associated with the research staff of the International Nickel Co. Inc., Bayonne, N. J. Graduate of the University of Michigan, Ann Arbor, Mich., from 1925 to 1934 he was assistant chief metallurgist in charge of research and improved practice at Timken-Detroit Axle. He is the author of six books on heat treatment and metallurgy, and has presented numerous papers before meetings of the American Society for Metals.

♦ ♦ ♦

C. D. Clawson, for the past year export manager of Ferro Enamel Corp., Cleveland, has left for Rio de Janeiro, Brazil, to become managing director of a new South American subsidary of Ferro Enamel which has its plant at San Paulo, Brazil. He became associated with the company in 1930 and took charge of foreign sales in 1934.

♦ ♦ ♦

A. J. Murphy, chief metallurgist for J. Stone & Co. Ltd., engineers and founders, Deptford, London, has been delegated by the Institute of British Foundrymen to present the Institute's exchange paper at the annual convention of the American Foundrymen's association at Toronto, Ont., Aug. 20-23. A graduate with first class honors of the University of Manchester, Mr. Murphy received the degree of master of science there in 1920. Prior to his present association with J. Stone & Co. he has been identified with the University college, Swansea, University of Wales, and the National Physical Laboratory.

A. J. Murphy

♦ ♦ ♦

P. W. Bowers, P. W. Bowers & Co., New York, has been re-elected presi-

dent of the New York chapter of the Institute of Scrap Iron & Steel Inc. Other officers elected: First vice president, David Strauss, Continental Iron & Steel Co., New York; second vice president, Thomas F. Kelly, Brooklyn, N. Y.; secretary, George Betten, S. Betten & Sons, New York; and treasurer, Joseph Moskowitz, Samuel Sons Iron & Steel Co., Brooklyn.

I. W. Solomon, I. W. Solomon Co., Pittsburgh, has been re-elected president of the Pittsburgh chapter of the scrap institute, other officers likewise being re-elected including: First vice president, H. N. Trimble, H. N. Trimble Co., and secretary, H. F. Stocker, H. F. Stocker & Co.

Guy Schapiro, Newman Iron & Steel Co., Cleveland has been chosen president of the Cleveland-Detroit chapter of the institute. Other officers include: First vice president, Ben Kramer, Modell Iron & Metal Co., Detroit; second vice president, Sam Kasle, Kasle Iron & Metal Co., Toledo, O.; secretary, Joseph Vasek, Max Friedman Co., Cleveland; and treasurer, Louis Miller, Columbia Iron & Metal Co., Cleveland.

M. D. Friedman, M. D. Friedman Co., Ashland, Ky., is the choice for president of the Cincinnati chapter. Other new officers include: Vice president, H. Moskowitz, Moskowitz Bros., Cincinnati, and secretary-treasurer, Bernard S. Hirschhorn, Wolf & Co., Hamilton, O.

♦ ♦ ♦

E. A. Carpenter has been elected secretary of E. F. Houghton & Co., Philadelphia, succeeding the late A. Everly Carpenter III.

♦ ♦ ♦

Edwin J. Schwanhausser, manager of the Buffalo works of the Worthington Pump & Machinery Corp., has been elected vice president of the Buffalo chamber of commerce.

♦ ♦ ♦

Dr. L. W. Eastwood, formerly assistant professor of metallurgy, Michigan College of Mining and Technology, Houghton, Mich., has been appointed to the research staff of the Aluminum Co. of America at its Cleveland plant.

♦ ♦ ♦

Michael G. Corson, New York, internationally known metallurgist, is in Milwaukee to spend some time working with the technical staff of Ampco Metals Inc. Recently returned from Europe, he has spent considerable time there as technical adviser to French and German companies.

♦ ♦ ♦

Charles W. Daniels has been appointed general sales manager for the entire line of contractors' equipment, industrial products, arc welders, hoists and brewery equipment built by Harnischfeger Corp., Milwaukee. He has been with the company several years, lately in charge of the Philadelphia office.

L. Douglas Smith

Who as noted in STEEL for June 10 has been appointed vice president of Lewis Foundry & Machine Co., Pittsburgh, subsidiary of Blaw-Knox Co., succeeding Jan R. Dunsford, resigned. Associated with the company since 1928, Mr. Smith previously was active in steel and machinery sales

L. M. Stout has been appointed to succeed Mr. Daniels as district manager of the Philadelphia territory.

♦ ♦ ♦

A. J. Jones, formerly with Mackintosh-Hemphill Co., Pittsburgh, is now associated with the roll sales department of Continental Roll & Steel Foundry Co., Pittsburgh.

♦ ♦ ♦

Howard Linn, formerly night superintendent of the 48-inch hot-strip mill, Weirton Steel Co., Weirton, W. Va., has been appointed superintendent of the new 42-inch strip mill being built at the McDonald (Youngstown), O., works of Carnegie Steel Co.

♦ ♦ ♦

R. E. Aptekar, formerly consultant on foundry practice, molding sands and refractories, has become associated with operating division of American Brake Shoe & Foundry Co., New York. Previous affiliations include the Ford Motor Co., American Radiator Co., and Autostrag of the U.S.S.R.

♦ ♦ ♦

Walter L. Tann, for a number of years active in various phases of mechanical engineering and industrial management, has been appointed to the engineering department of the Farrel-Birmingham Co. Inc., Ansonia, Conn. From 1915 to 1918 he was associated with the General Electric Co. in the design of electric drives for rolling mills. Following the World war he was assistant chief engineer for the Watson Products Corp. for three years. Since then, he has been associated with the Link-Belt Co. and Philadelphia Gear Works, and for the past eight years has been executive engineer for Peter Clark Inc., New York, engaged in the design of mechanical and hydraulic devices.

♦ ♦ ♦

Leonard G. Hults, traffic manager, United Engineering & Foundry Co., Pittsburgh, has been elected first vice president of the Pittsburgh Traffic club. Addison J. Sevin, general traffic manager of Pittsburgh Plate Glass Co., Pittsburgh, was elected president of the club.

S. B. Duff, traffic department, United States Steel Corp., was named treasurer, and the five members of the board of governors elected were: H. M. Dashbach, traffic department, United States Steel Corp.; S. S. Bruce, general traffic manager, Koppers Co.; A. R. Kennedy, traffic manager, Pittsburgh Steel Co.; M. C. Richards, traffic manager, Spang, Chalfant & Co., and J. W. Johnson, superintendent, Railway Express agency.

Foreign Trade

TIN plate exports from United States ranked next to iron and steel scrap in 1934, according to the iron and steel division, department of commerce. The year's total was 184,299 gross tons, shipped to 53 overseas markets, ranging from 1 ton to the United Kingdom to 39,863 tons to Japan.

The year's total, while 35.2 per cent short of the 243,560 tons exported in 1929, nevertheless was 97.6 per cent greater than in 1933. Japan led, taking 39,863 tons, China took 24,160, Argentina 20,093, Brazil 11,428, Mexico 9940, Philippine Islands 8683.

Meetings

PLAIN Washers Manufacturers association will hold its annual meeting at the Hotel New Yorker, New York, June 26-27. The first day will be devoted to business sessions and the second to golf. William F. Disch, president, Wrought Washer Mfg. Co., Milwaukee, is head of the association, and Eugene Caldwell, general manager of the same company, is secretary.

CHICAGO DISTRICT TO GOLF

Blast Furnace and Coke association of the Chicago district will hold a special golf tournament for members only at the Woodmar Country club, June 20. H. W. Johnson, In-

land Steel Co., East Chicago, Ind., is secretary-treasurer.

INVENTORS PLAN CONGRESS

National Inventors congress, 474 Hotel Sherman, Chicago, is sponsoring a national trade fair, at which new inventions and new products will be displayed, at the Hotel Sherman June 24-28.

¶Pittsburgh Foundrymen's association holds its annual outing and golf tournament at the Alcoma Country club, June 17, followed by a dinner at 7 p. m.

¶Purchasing Agents' Association of Pittsburgh will hold its annual summer outing at the Pittsburgh Field club, June 19.

Died:

GEORGE H. ROBERTS, 84, for 54 years active in the steel industry of eastern Pennsylvania and retired in 1933, in Steelton, Pa., recently. In 1879 he joined the Pennsylvania Steel Co. as machinist, later becoming master mechanic in the rolling mill department. He was the designer of the first mechanical rail mill at this plant, now a unit of the Bethlehem Steel Corp. He was notably active in civic affairs of Steelton.

♦ ♦ ♦

Fred Gardner, a former president of the Chicago Tube & Iron Co., in Miami, Fla., June 1.

♦ ♦ ♦

E. D. Neill, 58, paymaster for Gulf States Steel Co., Birmingham, Ala. in that city, June 10. He had been connected with the Gulf States for 26 years, and as paymaster for the past 12 years.

♦ ♦ ♦

Richard A. Parker, 80, mining engineer, former president of the United States Smelting Co. and at one time managing engineer for the Mahoning Iron Ore Co., Hibbing, Minn., in Denver, June 10.

♦ ♦ ♦

Fred A. Tecktonius, 56, president of the E. C. Tecktonius Mfg. Co., Racine, Wis., hardware specialties, June 6. He was the eldest son of the late E. C. Tecktonius, who estabished the company in 1891.

♦ ♦ ♦

Earl C. Smith, 55, the first sales manager of Osgood Co., Marion, O., excavating machinery, and identified with that company since 1910, in Marion, June 11. He was among the pioneers to advance the use of revolving-type steam shovels and in his earlier years was recognized as an authority on steam shovel operation and use.

♦ ♦ ♦

Nicholas F. Egler, 61, widely known throughout Mahoning valley steel mills through his work as manager of the Valley Mould & Iron Co's service department, in Youngstown, O., June 9. An expert on open-hearth furnace and rolling mill operations, he was formerly with the Blair Engineering Co., Chicago, becoming associated with Valley Mould & Iron eight years ago.

♦ ♦ ♦

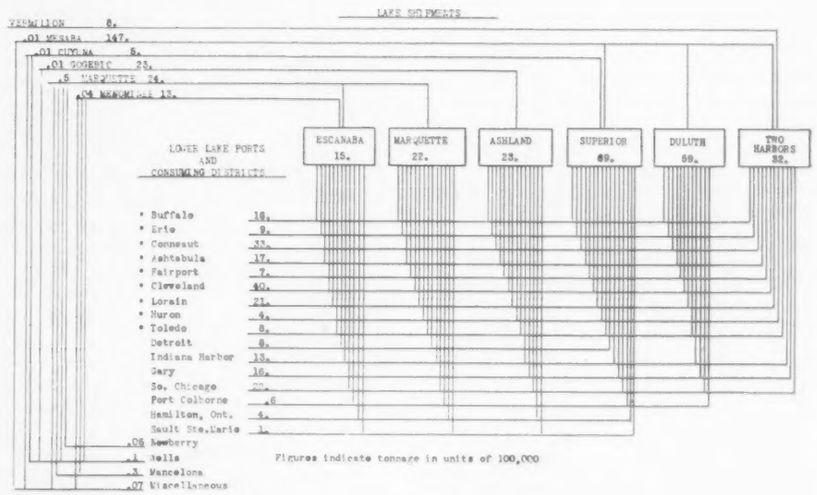
Willard A. Van Brunt, 88, pioneer farm implement manufacturer at Horicon, Wis., in Los Angeles, June 5. From 1901 to 1918 he was president of the Van Brunt Mfg. Co., founded by his father, the late David C. Van Brunt, in 1860. He retired to live in California upon selling the business to Deere & Co. in 1918. Several weeks before his death he presented 89 former employes at Horicon and widows of five former employes each with a $3000 government bond as "part of your earnings while we were on the job."

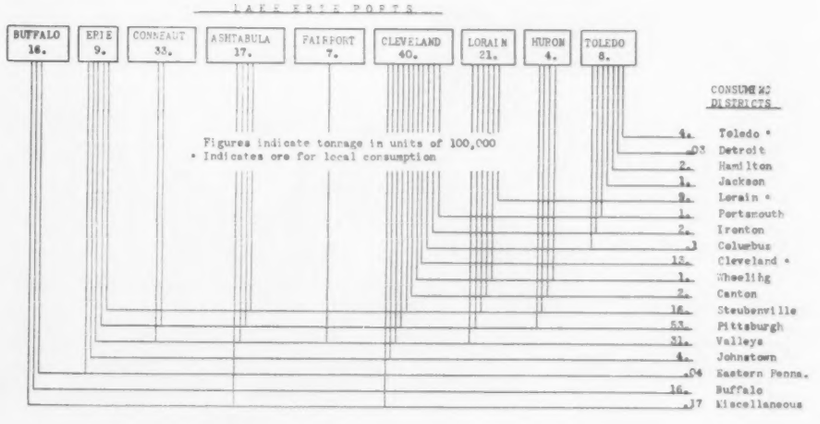
♦ ♦ ♦

James E. Mathews II, 59, ordnance engineer and one time manager of ordnance for the Bethlehem Steel Co., in Philadelphia, June 10,. A graduate of the United States naval academy, he was first affiliated with Bethlehem in 1901 as engineer of ordnance. He was sent to London in 1905 to take charge of the company's European business and remained abroad until 1913, when he became manager of ordnance at the Bethlehem, Pa., plant, in charge of all guns, ammunition and armor plate business. He resigned in 1920 to become engaged in banking.

Flow of Iron Ore from Mine to Furnace

ORIGIN and distribution of Lake Superior iron ore in 1934 are shown in the accompanying charts, prepared by the Lake Superior Iron Ore association, Cleveland. First, are the tonnages shipped from the six ranges to the upper lake ports, and those forwarded all rail to consumers. The quotas received by the upper lake ports and the shipments by vessels therefrom to lower lake ports also are traced to destinations.





Sixty Years from Ewart & Gore Store to Link-Belt

LINK-BELT COMPANY, Chicago, is celebrating its sixtieth anniversary this year. The story of its growth from the germ of an idea which evolved the detachable chain link, to its present stature of an organization having 3500 employes in its 18 plants and warehouses and 32 offices, is one of the most interesting chronicles of the country's industrial development.

In the early seventies of the last century, William Dana Ewart and C. W. Gore conducted a farm implement store in Belle Plaine, Iowa. The harvesters they sold were equipped with a chain built up of alternate square links made of round iron, and flat links of band iron, but the chain was not entirely satisfactory. It wore faster on one side than on the other, broke often, and stretched so much that frequently it ran off the sprockets.

Quick Repair Idea Born

Mr. Ewart conceived the idea of using a detachable link chain that could be repaired in the field if necessary, without need of halting the harvesting long enough to take the chain back to the barn to work on it. Models were prepared and a patent on "an improvement in drive-chain" was granted Sept. 1, 1874.

Seeking capital to manufacture his new device, Mr. Ewart went to Chicago where he persuaded an exhibitor of harvesting machinery in the Exposition building to install a drive on one of the machines permanently displayed there.

The drive attracted the attention of John C. Coonley, president of the Chicago Malleable Iron Co., who induced his associates to join him in promoting the Ewart detachable drive chain. This led to the formation of the Ewart Mfg. Co. in 1875, with Mr. Ewart, Mr. Coonley, J. H. Whittemore, Bronson B. Tuttle and A. A. Pope as principals; and manufacture and distribution of the new chain thus was started.

New Fields Are Entered

The new company soon commenced to expand, establishing its first branch agency in 1876 in Philadelphia under the direction of E. L. Clark and E. H. Burr. Seeking to extend the use of his chain to all types of power transmitting and materials-handling equipment, Mr. Ewart promoted the development of numerous new applications for his chain, and in 1880 the Link-Belt Machinery Co. was founded. This was the first step in giving to the present Link-Belt Company its distinctly engineering character. Mr. Ewart was president of the company, Edward A. Turner was brought in as secretary and treasurer, and Frank I. Pearce, production manager. A New York office was established in 1882.

Six years later an increase in engineering activities of the business necessitated the consolidation of Burr & Dodge, the Philadelphia agency, with the New York office of Link-Belt Machinery Co. This resulted in the formation of a third company, the Link-Belt Engineering Co., and in the building of a plant in Philadelphia, which became the eastern headquarters of the business.

In 1906 the three co-operating companies were merged through the purchase of the Ewart Mfg. Co. and the Link-Belt Engineering Co. by the Link-Belt Machinery Co., the grouped organization being known as the Link-Belt Company, with the late Charles Piez as its first president. Mr. Piez remained with the organization until his death in 1933, serving as president for 18 years and as chairman for nine years. Alfred Kauffmann was elected president in 1924, being succeeded in 1932 by George P. Torrence, who still holds that office.

Continued growth in business after 1906 required further expansion in manufacturing facilities. Subsidiaries were added during succeeding years, including the Olney Foundry Co. and the Dodge Steel Co., Philadelphia; Link-Belt Ltd., a Canadian branch; Elmira Machinery & Transmission Co. Ltd., Elmira, Ont.; the H. W. Caldwell & Son Co., Chicago; Howe Chain Co., Muskegon, Mich.; George W. Moore Co., Chicago; and the Meese & Gottfried Co. on the Pacific coast. Latest extensions were the establishment of a warehouse in Dallas, Tex., and a manufacturing plant in Atlanta, Ga., last year.

Still Centers on Handling

While the many products manufactured by the Link-Belt Company today represent a far cry from the Ewart chain link of 60 years ago, the company's activities still are centered principally in the fields of materials handling and mechanical power transmission equipment through which it serves practically every industry.

Above is the Belle Plaine, Iowa, store of Ewart & Gore. At the right is a composite view of present plants and warehouses of the Link-Belt Company

Transportation

IN recommending a through canal from the Ohio river to Lake Erie, a senate commerce committee is believed to have delayed if not killed the proposal to canalize the Beaver-Mahoning rivers and provide Youngstown, O., with a direct water outlet to the Ohio river.

Pittsburgh steel and railroad interests which have been fighting the Beaver-Struthers canal place this interpretation on the committee's action. Youngstown and other valley interests, however, still contend that their project is alive and that a Lake Erie-Ohio river canal does not necessarily preclude a water outlet to the valley.

The proposed Lake Erie-Ohio river canal is estimated to cost $147,000,000.

EDITORIAL

Collectivism a Menace to Steel and the Nation

FOUR days after the Supreme Court handed down its momentous decision invalidating the code portion of the national industrial recovery act and leaving only the wishbone of the blue eagle the President, in a moment of extreme frustration, indicated that he would go to the country and support a constitutional amendment expressly delegating wide control over all industry to the federal government.

So quick and so hostile was the reaction to this extraordinary proposal that the President and his fringe of new dealers have since shied off from any discussion of it. Their silence has almost become ominous. It therefore behooves iron and steel and other industry to analyze thoroughly just what effect this trend toward collectivism—for such it is—would have upon the industrial structure of the country, from the standpoint both of production and consumption.

Important as was the Supreme Court's objection to NIRA on the ground it represented an unwarranted delegation of its power by the congress—in other words, no matter how much the congress desires to transfer the burden of lawmaking, it dare not under the constitution—for steel the more compelling ground was that NIRA transcended the commerce regulatory power of the federal government. The theory and application of the commerce clause of the constitution as they relate to steel are interesting and pertinent.

At Various Stages, Iron and Steel Are In and Out of Commerce Flow

Take the manufacture of steel at Cleveland as an example. The mining of iron ore in Minnesota, the quarrying of limestone in Michigan, the mining of coking coal in Pennsylvania or West Virginia are strictly intrastate operations. But as these materials move across state lines en route to Cleveland they join what is termed the flow of interstate commerce, and their movement —as distinguished from their initial mining or quarrying—is subject to regulation by Washington.

At Cleveland these materials come to rest, as the courts put it, and their processing into steel is wholly intrastate. Then, when the steel product is shipped to Michigan or New York, the flow of interstate commerce is again joined. Many court decisions, including the notable one whereby the Weirton Steel Co. was sustained in its fight to uphold its employe representation plan, are predicated upon this theory of commerce as it relates to the manufacture of steel. What Mr. Roosevelt appears to have in mind, apparently, is to extend the arm of federal control over every process from mining of ore to fabrication of finished product.

A unified federal control is a leveling process, which visualizes any industry as a whole and attempts to lay down one pattern for all of it regardless of variations that are patently local and some of which are imposed by nature. Basically it is repugnant to any man of initiative. If the experiment in Russia is fearsome, then any effort to extend the doctrine of collectivism to industry through a flexing of the commerce clause of the constitution must be equally objectionable. Consider one typical situation.

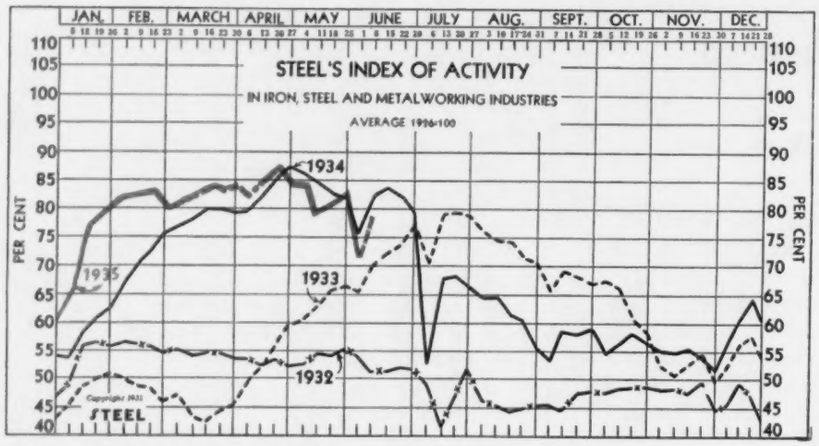
Stratifying Industry Not In Accord With American Principles

The soft climate of the South and the character of the labor supply permit a lower wage scale than most districts of the North, which are more urban, where living costs are higher and the climate is more rigorous. Assume a wage scale for both sections based upon average subsistence, after giving effect to local advantages or disadvantages, plus a margin of, say, 25 per cent. On certain products the South unquestionably could undersell the North.

In a free market, the theory is that the South would acquire certain markets, and labor and material in the North that might otherwise be competitive would be diverted to other productive channels. Under federal control, which is the objective of the modification of the constitution, some agency at Washington would be in position to decree a uniform wage scale, probably based upon the high-cost section, which would raise the cost of the product to the consumer and so localize the low-cost producer's market that in the last analysis he would starve for lack of tonnage.

The law of the survival of the fittest is a hard one, but under it mankind marches on. A former generation may have wept at the passing of canals, but the railroad was an improvement that could not be held back. The free play of private initiative, with the baser elements of mortals held in check by rules called trade practice standards, is better both for steel and for the nation than any philosophy of collectivism which centralizes control, decrees uniformity, and freezes and stratifies a nation and industry in today's mold.

THE BUSINESS TREND



STEEL'S *index of activity in the iron, steel and metalworking industries gained 7.4 points to 79.3 in the week ending June 8:*

Week ending	1935	1934	1933	1932
April 6	83.4	79.6	49.1	52.6
April 13	85.4	82.2	52.6	53.4
April 20	26.3	85.0	55.8	52.3
April 27	84.9	87.5	59.5	52.5
May 4	84.6	86.0	60.3	54.7
May 11	79.3	84.4	62.5	54.3
May 18	80.5	82.4	65.2	55.1
May 25	82.8	81.9	66.1	54.2
June 1	71.9†	75.7	65.3	51.0
June 8	79.3*	82.3	69.9	51.1

†Revised. *Preliminary.

The index charted above is based upon freight car loadings, electric power output, automobile assemblies (estimated by Cram's Reports) and the steelworks operating rate (estimated by STEEL*). Average for* 1926 *equals* 100, *weighted as follows: Steel rate* 40, *and car loadings power output and auto assemblies each* 20.

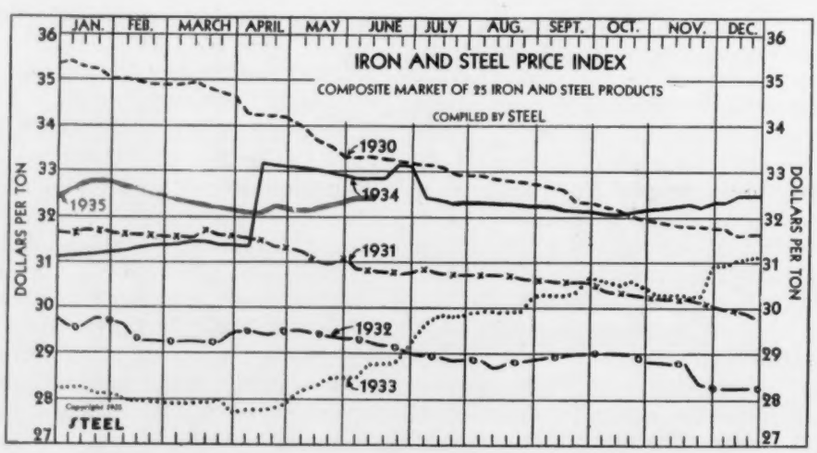
Steel's Index of Activity Snaps Back after Holiday

IT STILL is difficult to discover any serious adverse effects of the abolition of NRA. One would normally look for such a reaction in those markets which are particularly sensitive to changes affecting immediate future of demand, such as zinc and steel scrap prices, both of which have shown only slight fluctuations.

Most of the production trends in the week ending June 8 recovered sharply from the preceding holiday week. Automobile production and revenue freight car loadings registered a substantial gain. Power output, contrary to seasonal trends, advanced to mid-April levels. Steelworks operations, which are sensitive to automobile demand, declined to 41 per cent. As the result of these changes, STEEL's index of industrial production activity registered 79.3, recovering a large portion of the loss of the preceding week.

The steel situation is illustrative of the disadvantage of dependence on one major industry, particularly one that is highly seasonal, for recovery. That is the kind of recovery we have thus far experienced, whereas, a steady but widespread expansion in the heavy industries, one that can come only with complete confidence in the stability of currency, the absence of undue governmental restrictions and interference with the customary channels of trade, is undoubtedly probable. The removal of NRA is a turn to the right.

1935	
June 8	$32.45
June 1	32.43
May 25	32.41
May 18	32.34
May 11	32.34
May 4	32.30
April 27	$32.30
April 20	32.31
April 13	32.27
April 6	32.27

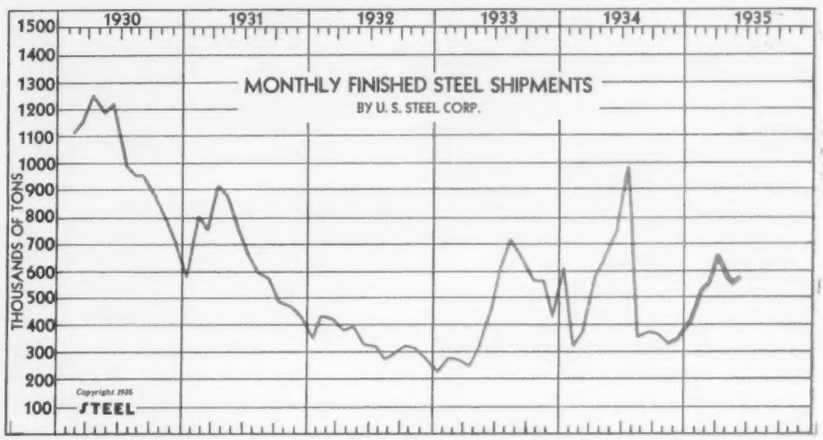


1934	
April 28	$33.09
April 21	33.12
April 14	33.15
April 7	31.33
June 9	$32.83
June 2	32.81
May 26	32.89
May 19	32.94
May 12	33.00
May 5	33.03

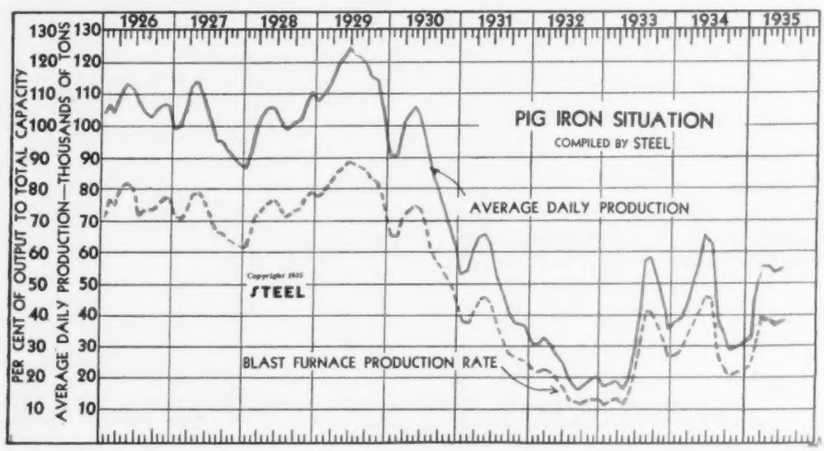
Finished Steel Shipments Gain in May

Gross Tons

	1935	1934	1933
Jan.	534,055	331,777	285,138
Feb.	583,137	385,500	275,929
March	668,056	588,209	256,793
April	591,728	643,009	335,321
May	598,915	745,063	455,302
June	.....	985,337	603,937
July	.....	369,938	701,322
Aug.	.....	378,023	668,155
Sept.	.....	370,306	575,161
Oct.	.....	343,962	572,897
Nov.	.....	366,119	430,358
Dec.	.....	418,630	600,639



May Iron Production Up Slightly

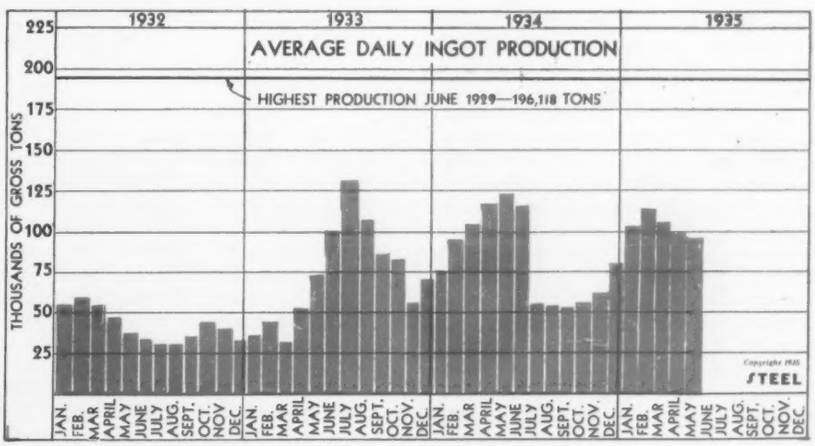


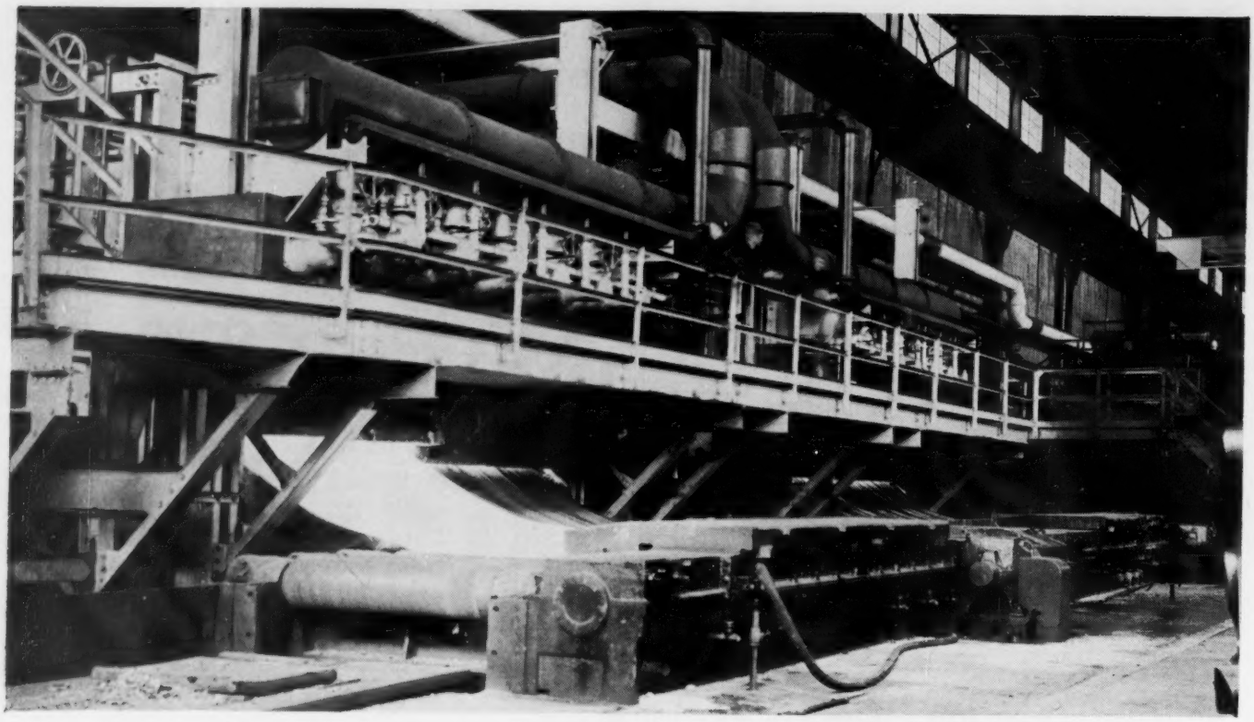
	Daily Average		Blast Furnace Rate	
	1935	1934	1935	1934
Jan.	47,692	39,537	34.2	28.3
Feb.	57,686	45,385	41.4	32.5
Mar.	57,120	52,438	41.0	37.5
April	55,719	57,873	40.0	41.4
May	55,986	66,370	40.2	47.5
June	.....	64,563	.....	46.3
July	.....	39,630	.....	28.4
Aug.	.....	34,199	.....	24.5
Sept.	.....	29,969	.....	21.5
Oct.	.....	30,689	.....	22.1
Nov.	.....	31,930	.....	22.8
Dec.	.....	33,161	.....	23.7

Ingot Rate Down 3.8 Per Cent in May

Gross Tons

Jan.	104,969	73,007	39,110
Feb.	114,255	90,965	44,709
March	108,873	102,275	33,268
April	100,243	115,912	53,817
May	96,372	124,177	73,201
June	.....	116,006	98,632
July	.....	58,912	126,734
Aug.	.....	50,503	106,058
Sept.	.....	50,068	87,811
Oct.	.....	54,151	80,188
Nov.	.....	61,126	58,507
Dec.	.....	77,664	71,944





Gas-fired continuous slab heating furnace at the new hot strip mill of Youngstown Sheet & Tube Co., Campbell, O., works. The white streak in the left foreground is the track of a hot slab as it slides down onto the approach table for the scale breaker

Anticipating Future Demands Upon Continuous Heating Furnaces

BY H. T. WATTS
Fuel Engineer, Gulf States Steel Co.,
Alabama City, Ala.

ALONG what lines may we expect future improvement of the continuous heating furnace for slabs or billets to proceed? Insistent demand for improved quality of product, greatly increased capacity, and desire for improved fuel consumption have each and severally engaged attention of designers and operators of these furnaces. This attention has been pleasingly fruitful. So much improvement has been made that the typical furnace, recognized as standard a few years ago, now would fall far short of satisfaction, and in many instances its use would not be tolerated.

The continuous furnace of the present day is a far cry from that construction which gained great popularity soon after the idea was originally conceived. At that time the furnace was heralded as a great saver of manual labor. Little thought was given to the method of fuel application, except for an attempt to simulate flame conditions of the in-and-out furnaces. The entire furnace volume was filled with a lazy flame and-out furnaces. The entire furnace rear of the chamber was not greatly less than the temperature of those near the front. Old practice had dictated the use of a certain number of furnaces on a mill of given capacity, and about the same number of continuous furnaces usually was installed, with the result only a slow heating rate on each furnace was required. Little difficulty was experienced in delivering to the mill a sufficient amount of properly heated steel.

Such easy sailing could not continue. Soon came a demand to decrease the number of furnaces in operation on a given mill production and later, principally due to application of electric drive to rolls, ca-

pacity of mills was increased greatly. After meeting these conditions by operation of the furnace at many times its original output, the designer and operator were confronted with rising unit fuel cost, and were compelled to take steps to improve fuel efficiency.

The heating furnace today not only is required to operate at tremendously high capacity and at extremely low fuel rate, but the steel which it delivers must be heated thoroughly throughout its mass, and particular care must be taken to insure proper condition of its surface when it leaves the furnace.

Readers will recall what changes were made to meet these demands. Both the economy and capacity of the furnace were improved by: Use of burners or port arrangement calculated properly to mix the air and gas entering the furnace; proper designation of roof height at various locations in the path of the gases through the furnace; automatic control of air-to-fuel ratio and of furnace draft; use of recuperators to heat the combustion air and reduce the stack loss; insulation and the like. All these items, innovations when initiated, are now necessities, vital to operation.

Later Developments

More recently, in efforts to preserve the quality of the steel while continuing operation at high capacity and low fuel consumption, developments have included use of firing both above and below the steel; use of burners having accurate proportioning but slow mixing rates to give long flames, with relatively lower temperature but with nevertheless greater heat transmission when related to the entire furnace area; and finally, the introduction of the major portion of the fuel at an advanced location in the steel travel, the steel in the remaining distance between this point and the steel discharge being held in a soaking condition, furnace temperature in the latter zone being held approximately at the temperature of the discharged steel.

Thus the history of this furnace indicates its many improvements have been made as required upon demand. Would it not be good policy to anticipate any future demands upon the continuous furnace and now try to establish complete refinement, building a furnace to the limit of perfection as nearly as it can be delineated with present knowledge? Such a furnace would have a fuel consumption so low that a further reduction by reasonable means would not be possible. Capacity in relation to size would represent the maximum rate in every section of the furnace at which heat could be transmitted to the steel without harm. Control of furnace atmosphere and temperature at various locations

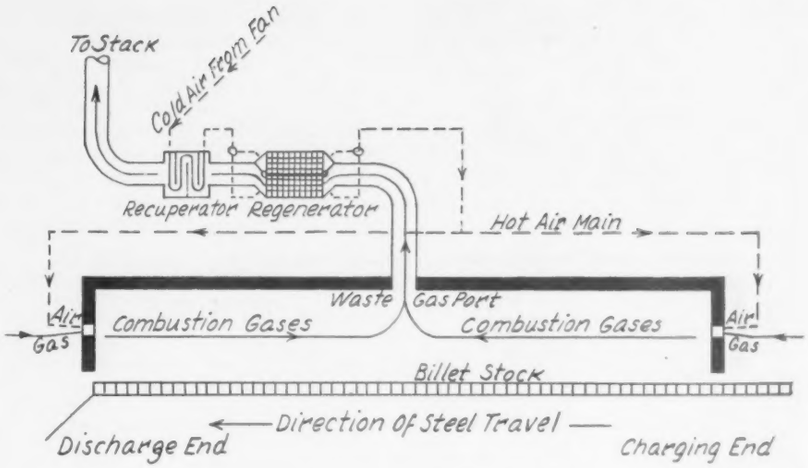


Fig. 1—Conventional diagram of continuous billet furnace fired from both ends, with waste gas port at center

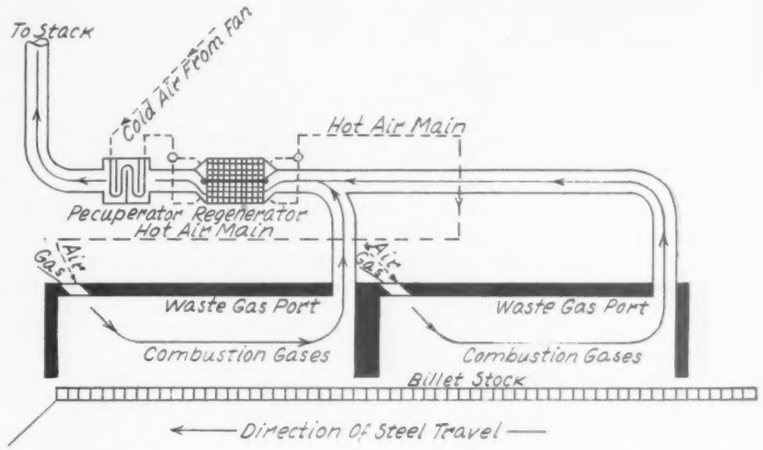


Fig. 2—Conventional diagram of continuous billet heating furnace divided into two sections

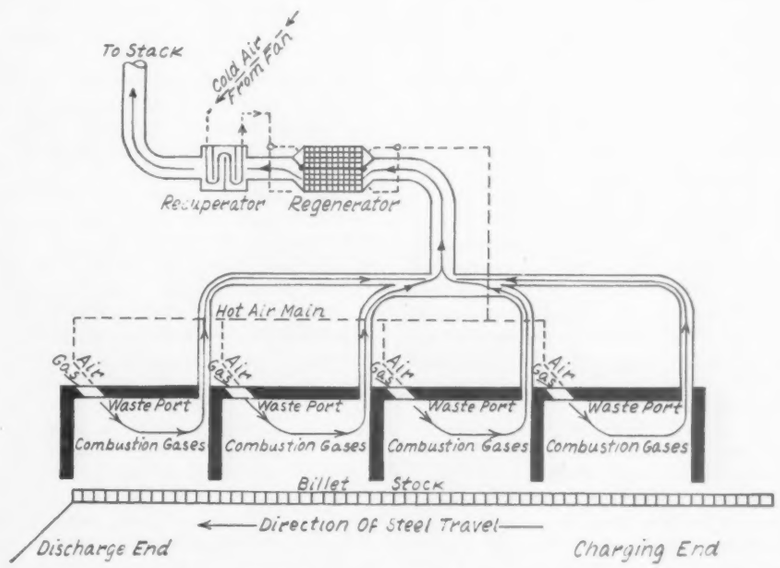


Fig. 3—Conventional diagram of continuous furnace with four separate heating compartments

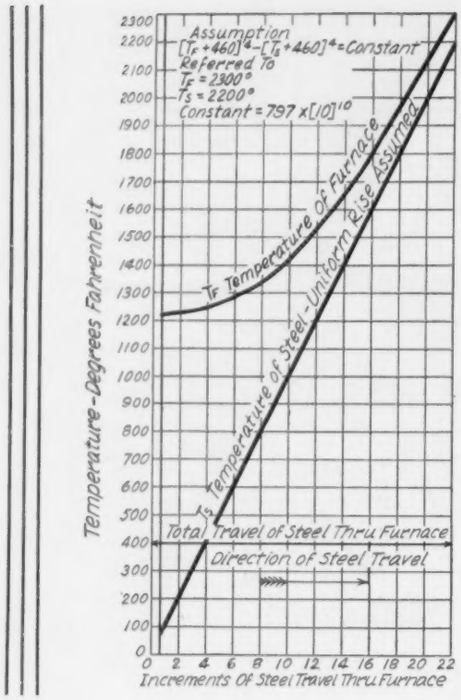


FIG. 4—Chart showing rate of heat transfer to steel in a continuous furnace, assuming relatively thin steel and a uniform rise in temperature of the steel as it moves through the furnace

would be so versatile the quality of the steel could be maintained to as high a degree as is possible. Optimum conditions could be obtained and maintained at will.

Such utopian conditions probably are obtainable more easily than might be expected. It is obvious further increases in furnace capacity must not be obtained by use of higher furnace temperature at the end of the furnace where the steel is discharged. In many cases this temperature already has approached a prohibitive height. As a matter of fact, considerable improvement and ease of operation would result if furnace temperature at the discharge end were maintained only slightly in excess of the temperature of the steel as the latter leaves the furnace. Increase in furnace capacity must then of necessity be produced by increase of heat transfer in other sections of the furnace, where the temperature of the steel is lower.

Reducing Heat Losses

Increased fuel economy, of course, cannot be effected except by reduction of losses. Two of these losses, those incident to radiation through the brickwork and to excessive or deficient air supply are important and can be reduced easily. The third loss, representing the heat lost in stack gases is of great importance in this connection, comprising, as it usually does, more than 50 per cent of the total heat units entering the furnace in the fuel. It will later be shown necessary to operate the furnace with gas temperature of 1400 degrees Fahr. or more at the rear end. This high temperature is responsible for most of the stack loss. With this temperature necessary, and perhaps even advisable under certain conditions, it appears real economy cannot be gained except by use of suitable elements, recuperators or regenerators, to extract heat from the stack gases, return it to the system through the combustion air and delivering waste products of combustion to the atmosphere at a reasonably low temperature.

Early Methods Changed

A number of years ago, when continuous furnaces were in early stages of improvement, many were operated with almost flameless combustion. Highly developed gas burners so accurately proportioned and so intimately mixed the air and gas that combustion was well started or almost completed before the mixture had passed into the furnace proper, and combustion was complete at a point not far removed from the nose of the burners. Obviously, with this arrangement, the combustion process was under absolute control, with maximum liberation of heat of the fuel and minimum volume of combustion products. This system was satisfactory for heating moderately thick stock at moderate rates of driving.

In later years, when higher furnace capacities were demanded, this type of heating was proved unsatisfactory, and furnace builders do not recommend its use at the present time. It was found upon greatly increasing the capacity, an undesirable distribution of heat transfer arose over the length of the furnace, the hotter end receiving more than its share of the increase in total heat transfer. This led to various changes to promote greater heating at the back, two of which have been referred to—the use of slow mixing and the resultant long flame, and the introduction of a large portion of the fuel at a point between the hot end and the center of the furnace. When the latter is used, the long flame usually is employed also.

While these features have met the demand successfully, it is felt a return to the use of flameless combustion would be of advantage if it were possible adequately to control the distribution of heat transfer over the length of the furnace. Before setting up conditions which might lead to the attainment of this goal, it is necessary to consider in detail the question of heat transfer and temperature distribution over the length of a continuous furnace.

Rate of Heat Transfer

Without any stipulation as to location or method of fuel introduction, consider the furnace temperature distribution required to heat steel uniformly throughout the length of its travel in a continuous furnace, heat transfer to the steel being equal in every section of the furnace. It is perhaps generally agreed heat is transferred to the steel almost entirely by radiation, and the rate of transfer in any section is therefore approximately proportional to the difference of the fourth powers of the absolute temperatures of the flame, roof or walls, and the steel in this section.

Application of this law to the continuous furnace is shown in Fig. 4. In this case it is assumed arbitrarily that relatively thin steel, after entering the furnace at 60 degrees Fahr., is subjected to a uniform and equal temperature rise as it is pushed gradually toward the other end, from which it is discharged at a temperature of 2200 degrees Fahr. In this particular case, it is also assumed that the furnace temperature at the hot end is 2300 degrees Fahr., 100 degrees higher than the temperature of the steel in this location. Using this temperature difference as a basis, and applying the same fourth power function of the temperatures, it is possible to derive furnace temperatures required at various other points to insure equal heat transfer by radiation in every section of the furnace.

The striking feature of this chart is that it shows a 100-degree temperature difference at the hot end of the furnace will cause the same radiant heat transfer per unit surface as approximately 1200 degrees temperature difference will effect at the cold end. Thus, if comparable heating effect is to be produced at the rear of the furnace, a high gas temperature must be maintained to

accomplish the result. It is clear that a further reduction of the rear temperature within the furnace, by whatever means, would decrease greatly the effectiveness of the rear end of the furnace in heating the steel.

Suppose, for instance, a furnace, formerly operating at a 1400-degree rear end gas temperature were lengthened sufficiently, if possible, to decrease the rear end gas temperature to 700 degrees. Applying the fourth power function of the temperatures, in the latter case, with the 700-degree temperature, radiant heat transfer is only about one-seventh the radiant heat transfer in the first case, this applying to conditions at the extreme rear end.

Referring again to the clear flame combustion, Fig. 1 shows that if all heat is liberated at the front end, combustion, Fig. 4 shows that if all ously through the furnace countercurrent to the direction of the steel travel, the steel and furnace temperatures as indicated cannot both be maintained. It will be recalled provision was made for a uniform rise in temperature of the steel as it progressed through the furnace. This rise in temperature is therefore properly indicated by a straight line. It will be noted, however, the corresponding series of required gas temperatures as derived to radiate heat uniformly to the steel in each section, do not fall on a straight line, but on a curved line. Since the steel is to receive heat at a uniform rate per foot of travel through the furnace, in order to meet this condition, the stream of gas must lose heat and temperature at a uniform rate as it passes through the furnace in the opposite direction (neglecting, of course, the effect of heat losses through the brick walls, hearth and roof).

Most Heating at Discharge

It will be noticed the curve of required gas temperatures flattens out toward the charging end of the furnace. This indicates, at the rear end, less heat is available from the stream of combustion gases between the gas temperatures required over equal increments of the travel of the steel, than at the front end between required temperatures over increments of corresponding length. This apparent inability of the gases to give up heat near the rear end, in spite of the high temperature differential at this point, may explain the tendency of this arrangement, equipped with clear flame burners at the front end, to perform most of the heating operation near the steel discharge, and little at the rear end, the billets moving over a considerable portion of their travel before beginning to show significant temperature rise.

In order to make this point clear, it may be well to refer to Fig. 4 and investigate temperature conditions at the front, center and rear of the hypothetical furnace in question. In passing over the first half of its travel through the furnace, the steel increases in temperature from 60 degrees to 1100 degrees Fahr., and in the second half from 1100 degrees to 2300 degrees Fahr., a rise of about 1100 degrees in each half. The required furnace temperature at the front end is 2300 degrees Fahr.; and at the mid-point 1469 degrees Fahr., showing a difference of 831 degrees. The furnace temperature at the rear end is 1223 degrees Fahr., giving a difference of only 246 degrees across the rear half of the furnace. Obviously this condition cannot be met by one stream of gas passing through the furnace, for sufficient heat is not available from the gas in a 246-degree temperature drop over the rear half of the furnace to heat steel at the same rate as in the front half where the temperature drop in the same stream of gas over the same distance is 831 degrees.

This reasoning is based on the assumption no heat is transmitted to the steel except by radiation, which is not entirely true. But the small error in this assumption probably is not sufficient to alter the general statement that with clear flame burners at the front end, all combustion and heat liberation taking place near the nose of the burners, it is impossible to heat steel at a uniform rate throughout the length of its travel through the furnace.

Uniform Rise Not Likely

Most of the foregoing has been predicated upon equal heat transfer in every section of the furnace, which would cause the temperature of the steel to rise at a uniform rate in passing through the furnace. On continuous furnaces of the older type, with all heat liberated at the front end, it is believed this condition of uniform rise in temperature of the steel is never accomplished. The heating effect at the front end can be increased greatly by only slight increases in combustion temperature. Thus, an increase from 2300 to 2400 degrees Fahr. gas temperature at the front end, with steel in the same section at 2200 degrees Fahr. in both cases, has the effect of more than doubling the heat transmission in this location. For comparable increase in heating rate at the rear end, it would be necessary to increase the rear end furnace temperature by 345 degrees.

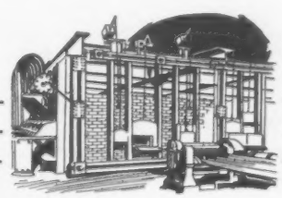
Therefore it has become evident in attempting to increase capacity of these older furnaces equipped with clear flame burners, undesirable conditions are produced. Increase in capacity is contributed mainly by increase in heat transmission to the steel in the front end.

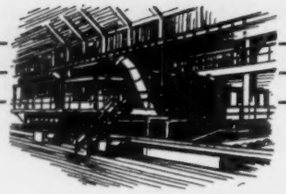
Inasmuch as steel at the front end is soon to be discharged, it is assumed the temperature of the center of the billet is nearly approaching the temperature of the billet surface. With this small surface-to-center temperature differential, ability of heat to flow from the surface to the center is limited. Since all net heat transferred to the surface of the billet either must remain there or pass toward the center, it is evident if heat is transferred too rapidly to the steel at the front end, excess temperature on the surface of the steel will be produced and dripping will occur.

Conditions at Charging End

At the charging end, the reverse is true. Temperature of the billet center in this location is so low heat can pass from the surface to the center at a high rate if provision is made to transmit heat to the surface rapidly. Thus, in attempting to increase the capacity of the older type of clear flame furnace, all heat being liberated at the hot end, it is possible to increase greatly the transmission of heat to the steel at the front end where the steel is hot and has little capacity to absorb heat; while it is difficult to increase heat transmission to the steel at the rear end where the steel is in excellent condition to receive heat. Evidently, if furnace capacity is to be increased, it must be accomplished through increased heat transfer in the rear half, and the more nearly the rear is approached, the more rapidly heat should be transmitted in that section.

Some may see no particular reason why the back end of a furnace should be expected to transfer heat to the steel even as rapidly as at the front end. They may refer to the increase in waste gas temperature which would accompany such practice. But it has been shown that the entering billets make but feeble effort in abstracting heat from and lowering the temperature of gases around 1400 degrees. Inasmuch as the waste temperature will be rather high in any





case under hard driving, a recuperator would seem advisable even under present conditions; and increased waste temperatures resulting from attempts at higher heat transmission in the rear end could be handled readily by proper changes in recuperator design.

The upper limit of furnace capacity is approached when the steel in every section receives net heat at the maximum capacity at which it is able to deliver it by conduction to the bottom of the billet, having for the moment no thought as to the manner or location of heat application to the furnace, except that when it is liberated, the resulting gas temperature will be less than that which would destroy refractories.

Keeping Within Limits

It is assumed here the billets rest on a solid bottom, with the bottom of the billet the coldest point in the cross-section. But, of course, we have gone a step too far in specifying the condition for maximum output of a furnace. In practice, maximum capacity necessarily would be much less. Under such a condition, the top surface of the steel necessarily would be held at the same temperature throughout the length of the furnace, a temperature slightly under the fusing point in order to obtain the maximum heat conduction through the cross-section. In holding the top surface at such a temperature it would be necessary to develop higher combustion temperatures at the rear end than at the front end of the furnace, since heat would be conducted more rapidly through the billet and away from the surface when at the rear end than when at the front end. Combustion temperatures necessary to do this probably would be beyond the realm of practical possibility, or in any event, destructive to brickwork. The only advantage in this conception of the maximum output conditions is that it shows the general trend of temperatures required to cause the steel to absorb heat throughout the length of its travel in direct proportion to its ability to receive it.

While this conception is decidedly impractical, its modification or use in part may be of advantage. A large share of its purpose would be served in a furnace fired from both ends with clear flame burners as indicated in Fig. 1, a waste port being located somewhere between, perhaps at the center of the furnace, the waste gases from both ends passing through this port and then through a recuperator or regenerator for reduction of their temperature to a reasonable degree. Perhaps some point could be found near the center where the gas temperature would not be greatly in excess of the present waste temperatures of a normal furnace, and apparatus for reduction of the temperature and salvage of the heat contained therein would not be much more difficult to devise than such apparatus sometimes used now.

It might be preferable in firing a furnace with two sets of burners to use the countercurrent principle in each case. This would require burners installed both at the front end and at the middle of the furnace, as indicated in Fig. 2. Waste gases from the front burners would pass out a stack port at the center, while the gases fired at the center would pass out a port at the rear to the stack. This arrangement would be equivalent to division of the present furnace into two smaller furnaces in tandem, and to an extent each of them would have the same inherent limitations as the one large furnace, but so far as the transfer of heat to the steel in proper quantities at various points is concerned, it appears to have considerable advantage over the one-chamber, one-stream design.

Further Division Possible

This principle has been put into practice in a number of furnaces operating today, except that the first stage is used primarily for soaking, with but little gas on it, the second stage being well up toward the front, and no individual stack port is provided for gases fired at the front end.

The idea could be carried further by division of the furnace into a greater number of individual tandem sections, each acting as a separate continuous furnace with its separate air and gas supply, waste gas port and recuperator or regenerator. A conventional diagram showing a furnace with four sections is shown in Fig. 3. As the number of sections is increased, the combined furnace becomes more flexible, since the temperature in each section can be controlled to meet the demand. Whether it is desired to heat the steel at a uniform rate, or at a rate proportional to its ability to receive it without overheating the surface, such a construction would permit operation as desired.

Underfiring has not been considered in this discussion, the thought being that if greatly increased heat transfer in the back end of a furnace is brought about as suggested, the stock can be heated properly by application of heat to the top side only, overcoming the necessity of imposing a large heat loss on the system, incident to the use of water cooled skid pipes to support the stock in the open chamber. Underfiring is now justifiable if it is otherwise impossible to heat the stock properly, this applying particularly to thick slabs. It would be properly applicable to almost any furnace, if metallurgists could develop some reasonably priced material which would support the stock without the use of a cooling agent to which much heat is rejected and destined to be of no further use in the heating cycle. Perhaps some high-grade material can be found which would require only a small amount of cooling agent to make it satisfactory, in which case combustion air passing through the skids at high velocity might be employed for the cooling purpose, the heat in this manner being returned to the system. If the furnace efficiency is 34 per cent the heat now lost to skid pipe water must be supplied in three-fold to the combustion chamber, in order to satisfy the demand of various heat losses which accompany it. If heavy firing of the furnace at the back end, in accordance with one of the methods outlined, could obviate the necessity of underfiring, it is likely the saving in heat otherwise lost to skid pipe water would offset largely any increase in stack temperature which might result from the heavy rear end firing.

In attempting to put the back end of a furnace to work, rich mixtures and long flames sometimes are used, and a considerable loss is likely in unburned fuel to the stack. If the use of two or more sets of clear flame burners in various locations as described makes it possible to perform a large share of the heating operation in the back end of the furnace, the increased stack temperature which may result will be to some extent compensated by the reduction in this unburned fuel loss.

Cooling Waste Gases

Possibly the combination of a regenerator and recuperator in tandem would be required to cope with high waste gas temperatures satisfactorily and at the same time to reduce them to a sufficiently low degree. The regenerator, made of refractory and having a reversing cycle, could first receive the gases and bear the brunt of the burden imposed by the high temperatures, while the continuous recuperator could stand second in line and effect the final temperature reduction.

This program is recognized as

(*Please turn to Page* 58)

Workmen on pouring jobs, such as this roll pouring operation, are required to wear goggles and leggings. The foreman, at the left, also wears an asbestos coat

Castings Molded After the Safety Pattern

BY IRVIN A. BRINKMAN
Safety Director, Mackintosh-Hemphill Co., Pittsburgh

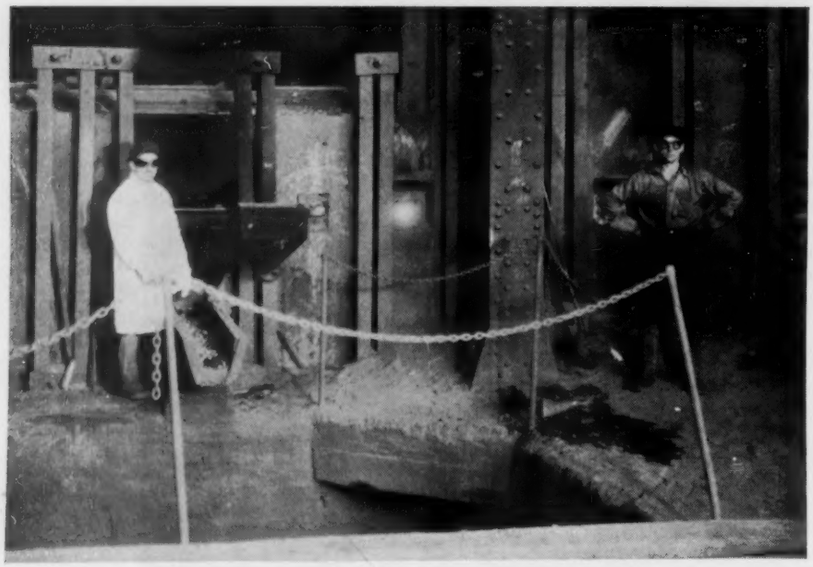
SAFETY problems are many in handling castings of unusual size, shape and weight, such as housings, bed plates, cinder pots, cylinders and anchor bases for bridges.

To give an idea of the type of product to be handled, an example may be cited of some anchor bases recently made for a large bridge. Allowing for the weight of the heads and gates, together with that of the sane, one of these castings in the rough weighed approximately 65 tons, and the outside measurements of the flask were 19 feet long by 16 feet wide by 12 feet high. These castings, when finished, weighed 50 tons each.

Assembly of flasks for products such as these presents a hazard at the beginning of the process, due to the size and the weight of the plates necessary. For rolls and cinder pots, special rigging must be used, and some of this is of unusual size and shape, and cumbersome to handle.

The foundry foreman gives special

A well-kept molding floor, showing method of laying out jobs. Behind the men can be seen the top of a slag pot flask, weighted down and extending out of the pit



Tap-out men on all furnaces are equipped with asbestos coat and gloves, chrome leather leggings and half blue goggles

attention to jobs of this type, especially when the flask is being assembled, seeing to it that the plates are bolted properly and securely. For this work he assigns a pit of sufficient size so men have enough room to work safely.

The next step is to dry out the mold thoroughly as contact with moisture by molten metal is fatal. Sufficient weight then is placed on the flask securely, when the pit does not have screw-downs. This is done to anchor it during the pouring of the casting, which is of vital importance.

Cranes and crane cables used to transport the ladle are thoroughly inspected each day. Ladles also are inspected before being used. Tap-out men at the open hearth furnace, air furnace and cupolas are equipped with either chrome leather coverall aprons or three-quarter length asbestos coats, knee length chrome leather leggings, asbestos gloves and goggles. All men employed on the pouring job, whether ladle or hand pouring, are required to wear goggles and knee length leggings.

Before these castings are moved to the shakeout floor, the bolts are removed from one plate at a time, and each plate as it is loosened is removed to a place of safety by a crane. This is imperative, since plenty of opportunity exists for a serious accident at the time the flask is being disassembled, if more than one plate is unbolted at a time, due to the plates on the opposite side falling.

When the casting is ready to be removed from the pit, there arises the most hazardous part of the job, that is, lifting the casting from the pit and transporting it to the shakeout floor.

The first procedure is to have the necessary space cleared and ready to receive the casting. Two cranes are used, both of which have been previously inspected. No one is allowed to remain in the area through which it is to be carried, and all men required to work around it stay well to the outside with plenty of room to move about. The whole procedure is under the direct supervision of the foremen.

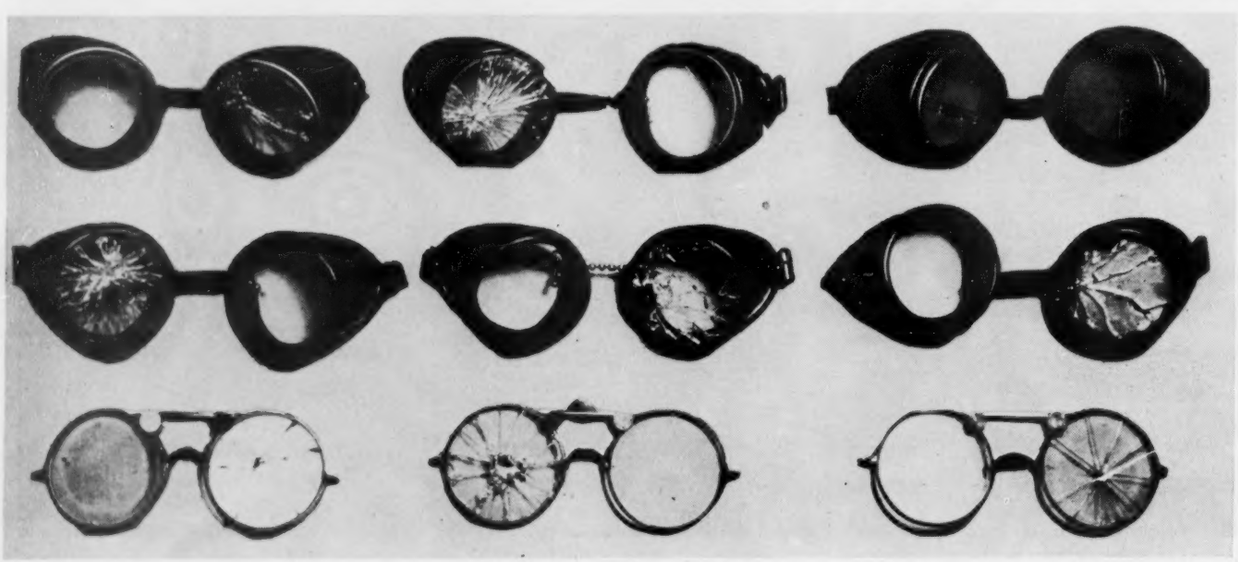
Hazards in Chipping

Chipping and cleaning is the next operation and as there are a number of large cores, there is considerable to be done. In addition, heads and gates must be burned off.

In the chipping and cleaning departments all men, including the foremen, are required to wear goggles at all times. In excessively dusty work the men wear respirators. As a further precaution, men are never permitted to chip directly across from each other, and where the hazard is of unusual character, a screen shields the operator.

In the steel foundry roll shop, all the hands are required to wear goggles at all times. In the iron foundry roll shop and in machine shops, all lathe hands and machinists are required to wear goggles wherever there is a hazard, this to be decided by the foremen. Another safety requirement is that all men must wear safety shoes.

The above requirements have eliminated all eye and foot injuries since the latter part of 1931, when this order became effective. However, a collection of goggles and steel toe caps



Mute testimony as to the value of goggles in protecting eyes, and in fact lives, of workmen engaged in chipping operations

New GULFLUBE MOTOR OIL

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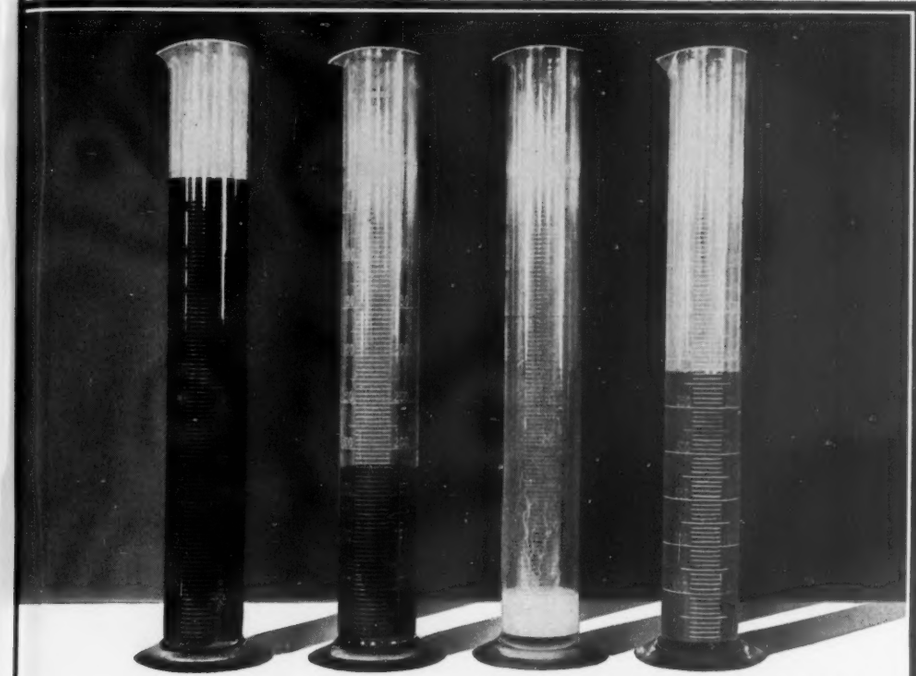
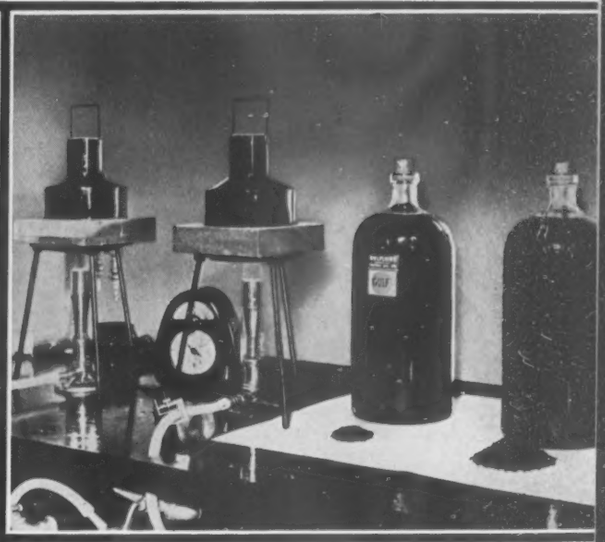


Above is a sample of the original charge of lubricating stock as it goes to the Multi-Sol plant.

Here is the quantity of carbon and sludge forming impurities removed by the Multi-Sol process.

The third test tube contains the solid paraffin wax removed by this efficient refining process.

Above is shown the quantity of the pure Gulflube Motor Oil after dewaxing, filtering, etc., secured from the original lubricating stock fractionated from the crude.



The photograph above shows the quantity of carbon that is removed by the Conradson carbon residue test when applied to a gallon of the new Gulflube Motor Oil and a gallon of another widely distributed brand of motor oil.

Above is a general view of Gulf's new Multi-Sol plant at the Girard Point Refinery, Philadelphia, Pa.

FLEET OPERATORS CAN NOW USE A PREMIUM QUALITY OIL WITHOUT PAYING PREMIUM PRICE.....

[The new Gulflube is the only motor oil made by this process and sold at 25c per quart at service stations.]

NOW truck and commercial car operators can afford to use a premium quality motor oil!

The new Gulflube motor oil, made by Gulf's Multi-Sol process, is now available to fleet operators at no higher price than they are accustomed to paying for oils refined by less efficient methods.

The Multi-Sol process makes Gulflube *a premium oil in every respect.* In this process, solvents of two opposite actions are used. One action dissolves out the impurities in the lubricating stock refined from the crude oil—tars, gum and carbon forming compounds—and settles them to the bottom of the extraction tanks. The other action selects the desirable parts of the oil and floats them to the top. This selected oil is then "skimmed off," thoroughly dewaxed and filtered—to form the finest motor oil ever offered at its price.

Try this extraordinary new oil in your equipment. You will be pleased with the results.

6 REASONS WHY

NO OTHER MOTOR OIL OF ITS PRICE GIVES YOU *ALL* THESE QUALITY POINTS

1. HIGHER MILEAGE—high resistance to oxidation—non-sludging—extra long life.
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3. EASY STARTING and resistance to heat due to high true viscosity index.
4. ZERO POUR TEST—wax actually removed—no wax crystal poisons added.
5. HIGH FILM STRENGTH—a pure natural mineral oil—no injurious compounds added—will not corrode new alloy bearings.
6. ECONOMICAL LUBRICATION due to these quality points.

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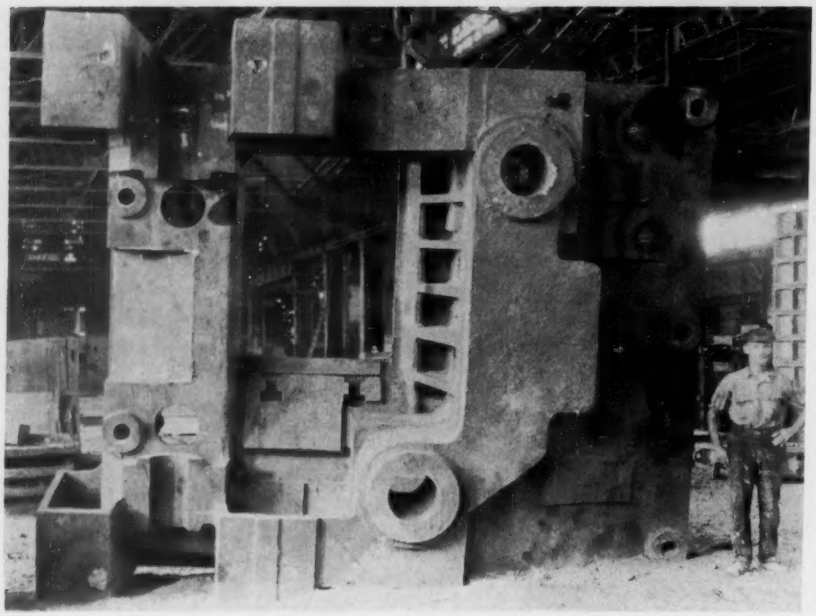

Handling a huge steel casting such as this 80,000-pound shear base calls for keen foresight in regard to safety precautions

which have been the means of preventing many serious injuries, testifies to the effectiveness of safety precautions.

In connection with these regulations is set up a prescribed discipline for which, however, little need has been found. In the safety program foremen are held responsible for the safety of their men, and safety is considered by the management to be of equal importance to production.

Another factor deemed necessary in the safe handling of the product is good housekeeping, especially clean floors and unobstructed walkways. This has been an integral part of the safety program.

Letters Part of Program

As a further means of enlisting the co-operation of all employes in the plan for accident prevention, letters are sent to each man at regular intervals on subjects pertaining to operations or other topics of importance.

Experience has proved that a satisfactory performance can be had in this heavy industry but that it is necessary to have the supervisory force take the same interest in accident prevention as in production. And truly fine co-operation has been received as the supervisory force understands it is the policy of the company, and they really are interested in accident prevention.

When foremen do become interested in the prevention of accidents and learn an accident has a direct bearing on the production costs of a department, they will plan the safety of the job at the same time they lay out the production program. It is through such interest and such planning that it has been possible to overcome the unusual hazards of a heavy foundry.

Study Accident Causes

When there is an accident, whether it causes an injury to a man or not, there is an investigation to determine the cause, in an endeavor to eliminate it and thereby prevent a recurrence. This investigation is made by the supervising foreman and the safety director.

Some of the records made by the two Mackintosh-Hemphill foundries give a concrete idea of what can be done.

The first record of any consequence was made in 1931, when the Garrison plant worked 168 days without a lost-time accident; the next run was 186 days, then came the best record to date, working from Dec. 18, 1931, up to Oct. 16, 1933—670 days; during the same period the Midland plant worked from March 22, 1932, until July 22, 1933, or 466 days without a lost-time accident.

Present record for Garrison started June 8, 1934, and the Midland plant had its last lost-time accident June 18, 1934; at this writing they are still carrying on the good work.

The Garrison plant won second place in the National Safety council's metals section safety contest—foundry division—in 1932, and the bronze trophy in 1933. The Midland plant won second place in the steel foundry contest in 1932, and third place in 1934. As of March 18 in the current contest, ending June 30, 1935, the Midland plant was holding first place and the Garrison plant was in second place.

Demand for Skilled Workers Revives Apprentice Training

At the time of the 1934 convention of the American Foundrymen's association the need for trained foundry workers was brought out at the apprentice training session. W. F. Patterson, executive secretary of the federal committee on apprentice training, addressed the group on "What the Government is Doing About Apprenticeship."

The discussion brought out that while a few foundries had maintained apprentice training during the depression period, others had dropped their training programs and when their production increased a shortage of skilled men was found. Some foundries are now renewing their training plans but it will be some time before the results are apparent.

Following this meeting the apprentice training committee of the A.F.A., co-operating with a similar committee of National Founders association, adopted and published "Standards of Four-Year Foundry Apprenticeship." These standards cover recommendations on selection, terms, schedules of advancement, related instruction, and terms of indenture.

This work of the A.F.A. committee will be followed up by a session on this subject, which will be held at the Toronto convention of the association, the week of Aug. 20. At this meeting talks will be given by Victor Hydar, personnel manager, Falk Corp., Milwaukee, and J. E. Goss, employment manager of Brown & Sharpe Mfg. Co., Providence, R. I.

Uses Solid Steel Propeller In New-Type Airplanes

A solid steel airplane propeller of a new type which holds promise of increased effiency and lowered manufacturing costs will be built for the bureau of air commerce, department of commerce, as a project in the bureau's airplane development program, Eugene L. Vidal, director of air commerce, has announced.

Under a contract with Ernest G. McCauley, of Dayton, O., five of the propellers are to be delivered on or before Sept. 30. They are intended for use in airplanes of a new design which are being constructed for the bureau.

According to John H. Geisse, chief of the bureau's development section, the new propellers will be thinner than types now used, and the cross section will be of a different shape. The new shape is claimed to bring about an improvement in cooling of the engine. Blades and hubs are to be machined from die forgings.

● *Only strip that is flawless in finish could produce these dishes. Offered in national advertising, and proved immensely popular. Made from cold rolled Acme Superstrip, as are scores of products in the general, automotive, and electrical fields.*

● *Cold rolled cut lengths of Acme Superstrip, being packed on skids for shipment. Careful packing insures safe delivery and protection to the high finish.*

BEAUTY OF FINISH IN ACME SUPERSTRIP CAN HELP SELL CONSUMER PRODUCTS

● Manufacturers using metal parts that must pass the test for beauty, as well as utility, can benefit by using Acme Superstrip.

It's not run-of-the-mine strip steel. Acme makes Superstrip to meet the specific needs of each product.

Extreme care and skill produce finishes that are unusual in their perfection. It is not only the rolls or their finish, but their *operation* that gives the finish that wins approval by manufacturers of nationally known consumer products.

Even to the method of packing for shipment, the Acme care extends. Superstrip reaches you in a manner best suited to your production needs.

Send today for the booklet "Batting 'Em Out"—telling of better products from Superstrip. ACME STEEL COMPANY, General Offices: Chicago. *Branches and Sales Offices in Principal Cities.*

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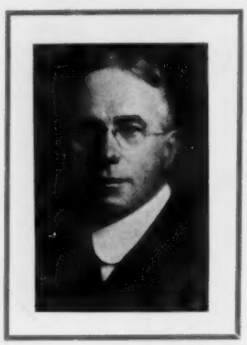
To Buy or Not To Buy?



HENRY BUKER,

Vice President,

Brown and Sharpe Mfg. Co., Providence, R. I.,

SAYS:

NEW machine tools usually are purchased because of one of four compelling reasons: A company buys because it is starting a new business; it wants to expand production; it seeks to reduce unit costs; or it desires more accurate work.

While the obsolescence factor must be considered, age does not necessarily mean a machine should be replaced unless the new machine can produce more work or with greater accuracy. Where average limits are required, and the demands for quantity are not emphasized, old machines may answer the purpose, judged from a financial standpoint. It is undesirable, therefore, to urge a customer to replace an old machine unless increased production, reduced costs or greater accuracy are required.

Strive for Accuracy

It is my experience that most of the present business in new machine tools is based on a desire for more accurate production with minimum cost. Many customers lately have been selling or scrapping used machines which are far from being worn out and which continue capable of turning out work of average quality in large volume. The reason is that the new machines which replace them will produce more accurate work even if the volume of production is not always greater.

We had an interesting instance of this trend when an important manufacturer purchased a group of our machines for use in the production of an item in large quantities. Certain types of multiple spindle machines could have produced the pieces in larger quantities; in fact, installation of these machines represented a sacrifice in machine production of about 20 per cent. This customer's reason for buying the equipment was that it gave him a saving of about 50 per cent in inspection time due to the consistent accuracy of the machined pieces. It also helped him in assembling the pieces in his product.

Modern Tools Answer Need

Often, as suggested by the case mentioned, if a manufacturer will check his cost of inspection and assembly, he will find that accuracy in production is just as important as shorter machine time.

Modern machines provide greater accuracy and increased production for several reasons. They have higher speeds which permit the user to derive full advantage from the possibilities of improved cutting tools. They usually are heavier in design, which is desirable if the work requires it, inasmuch as the heavier construction usually makes for accuracy. This is not intended to mean that heavier weight is desirable under all circumstances; as a matter of fact, there is great danger of ma-

". . . . . Most of the present business in new machine tools is based on a desire for more accurate production with minimum cost," concludes Mr. Buker, a former president of the National Machine Tool Builders' association and closely allied with machine tool building since 1892. Prior to the demise of NRA he was chairman of the code authority for the machine tool industry. This is the third article of a series which STEEL is presenting in an effort to point out the economic advantages of capital goods replacement. Other leaders in the machinery and equipment fields will voice their opinions in succeeding installments.

chines being too heavy on light work, which often has the effect of interfering with production and increasing fatigue of the operator.

A feature of most modern machine tools which relieves the operator of excessive effort, enabling him to work with greater efficiency during the entire day, is the location of practically all operating levers at the front of the machine. The workman can operate them without moving from his position.

Because a machine tool is usually only a unit in a production line, its selection properly must be based on an analytical study of production costs. There are two ways of undertaking such an analysis, one of which, to my mind, is sound, the other questionable.

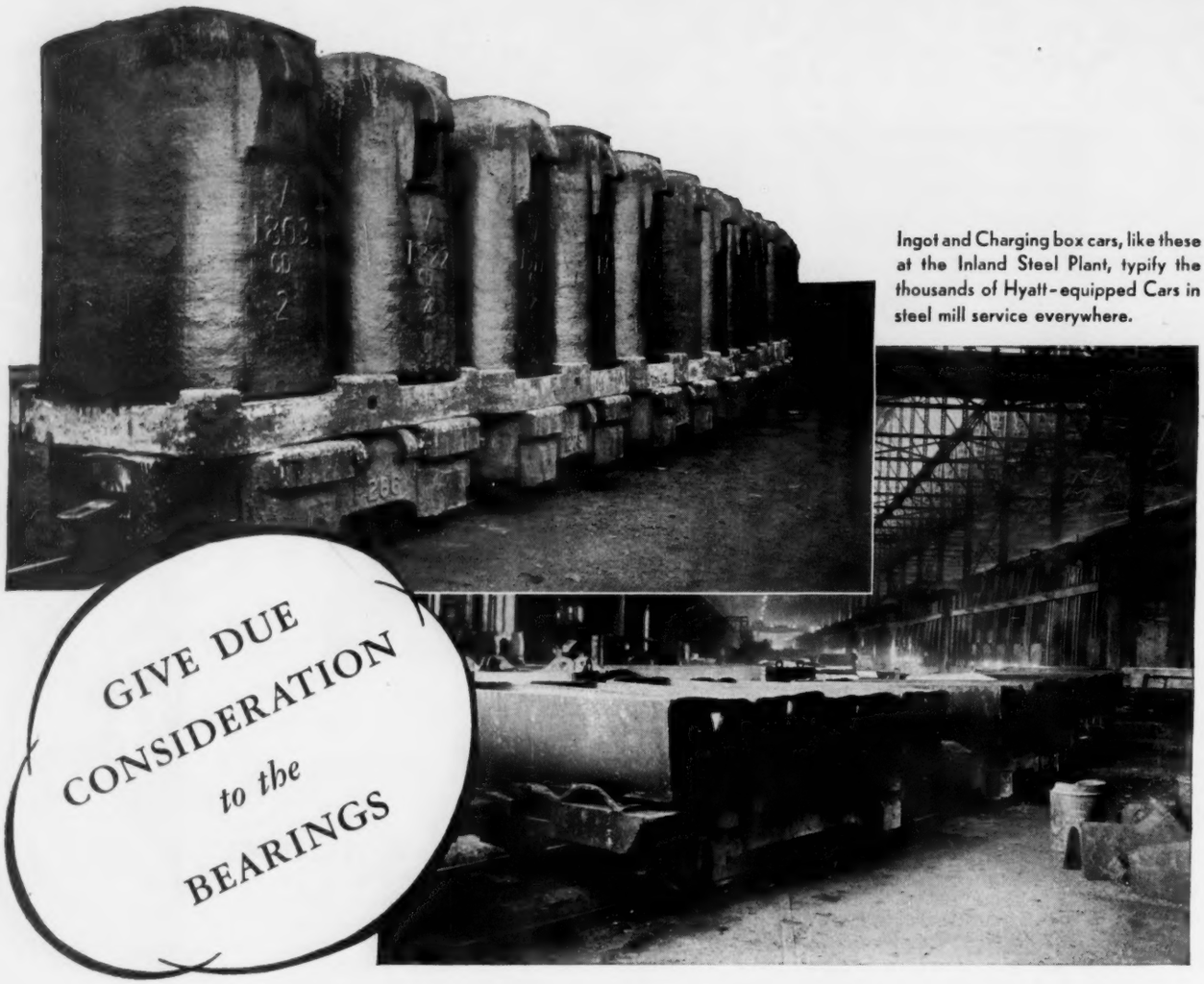
Calling in Sales Engineers

Sometimes, in the past, large manufacturers have asked machine tool builders to send one or more men to spend weeks and sometimes months in going over their plants, for the purpose of studying operations and reporting on how performance can be improved. Often, representatives of three or four competing machine tool companies thus have worked in one plant simultaneously.

This method, to my mind, is questionable. The final reports must prove confusing to the manufacturer, since competitors usually approach the problem from different angles. Their recommendations are likely to be at variance. The confusion must be all the greater in view of the fact some of the machine tool companies will be extremely conservative in their recommendations, while others may take chances and guarantee the limit. A manufacturer employing this method automatically invites the machine tool companies participating to bring great selling pressure to bear on him —a situation in which the sales tactics employed may loom up more impressively than the real merits.

Self-Analysis Better

I believe the best method is for the manufacturing company to make its own study of production problems, assuming the manufacturing organization is in touch with up-to-date practices and equipment. Possessed of such knowledge, a plant organization is in a position to analyze its own manufacturing problems. After the analysis has been made by the proper members of the plant organization they then can go over the problems with salesmen and engineers from the machine tool companies. Because they have made their own analysis, the plant men are able to give more information to the machine tool representatives as to accuracy and other features required and are in a position to exercise better judgment in deciding in regard to recommendations made by the machine tool builders.



Ingot and Charging box cars, like these at the Inland Steel Plant, typify the thousands of Hyatt-equipped Cars in steel mill service everywhere.

GIVE DUE CONSIDERATION *to the* BEARINGS

Hyatt Roller Bearings go on serving and saving without attention except for an occasional lubrication. No matter how extreme the conditions or heavy the loads, operating amidst dust or dirt, indoors or out—Hyatts are protecting equipment everywhere.

They do their work so efficiently that many times when they are in a product, the user is scarcely aware of it. But the builder of Hyattized machinery knows why he put them there—he appreciates the importance of good bearings. So whether you build, buy or sell equipment, we repeat —give due consideration to the bearings. Hyatt Roller Bearing Company, Newark, Detroit, Chicago, Pittsburgh, Oakland.

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

METHODS AND MATERIALS

Applies Heat to Quenching Tank

AFTER having installed an electrically heated, gaseous atmosphere carburizing furnace the Geometric Stamping Co., Cleveland, was satisfied it had provided the best type of equipment to heat treat its tools and dies. However, some difficulty still was experienced with the uniformity of hardened pieces; surfaces would be sufficiently hard but they would be spotted over with soft spots.

How the company studied and solved this problem is told by R. Haserodt, plant manager of the company, in an article appearing in the May issue of *Electrical Production*, published by the Electical League of Cleveland. According to Mr. Haserodt, the search for better die and tool life revealed that the temperature of the quenching medium had considerable to do with uniformity of hardened pieces.

It was known that soft spots could be caused by bubbles forming on the work in the quench, and investigation showed that this action held a definite relationship to quench bath temperatuer. A quench temperature between 105 and 120 degrees Fahr. gave the best results with a minimum of soft spots. To maintain this temperature, electric midget heaters were placed directly in the oil bath, since this method would give good efficiency, would provide uniform heating and would be safe.

Calculations showed that with 12 kilowatts installed in the tank, the quench would be brought up to the desired temperature within about 1 hour, which would permit the operator to cut the power on the quench at the time he charged the furnace.

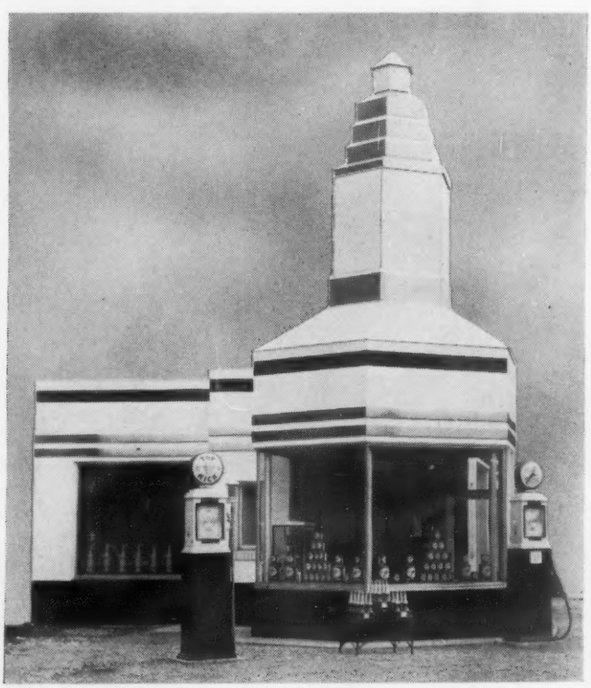
For production work, the quench needs cooling and not heating, so that the energy used is quite small. Power supplied to the heaters is controlled by an adjustable thermostat working through a differential of plus or minus 3 degrees Fahr.

Another novel feature of the quench is a wire basket, permanently mounted between two uprights which are pistons operated by air cylinders. In quenching a charge, the operator starts the air cylinders which automatically move the basket rapidly up and down.

No test data have been collected, but all dies and tools are checked carefully with a hardness tester, so that accurate readings are taken on each charge. It is known definitely that the product has been improved since the quench tank has been heated.

S S S

Stainless Trim for Service Station



INTERESTING use of stainless steel is found in this service station just completed at Tarentum, Pa., near Pittsburgh. Sheets and strips of 18-8 *stainless, made by Allegheny Steel Co., Brackenridge, Pa., and largely in 20 and 22 gage sections, were cold formed and fabricated by Johnson Hardware Co., New Kensington, Pa. Satin finish was specified. The alloy is used in sheet form on the tower. The strip was used over the doors. About 700 pounds of* 18-8 *was used. Horne & Woods, Tarentum, were architects*

Rare Metal Indium Now Is Produced Commercially

The rare metal indium now is being produced at the rate of 9000 Troy ounces per month, according to Dr. William S. Murray, Indium Corp. of America, Utica, N. Y., in speaking before the American Chemical society in New York, April 25. The metal is delivered in 2-ounce bars of high purity and is coming into commerce rapidly.

Indium plating has been simplified during the past year, said Dr. Murray, and the indium salt of hydro-

chloric acid now is added directly to the plating solution. This solution is the same as used for plating silver with the exception that a special sugar is added. One valuable property of indium is that it sinks into the surface of such metals as copper and silver and not only protects the surface but hardens it.

Indium has found a place in increasing the strength and ductility of dental gold. Because indium has some chemical relationship to cadmium and tin there has been some question as to whether it is affected by temperature changes. Some work has been done along this line but no definite results obtained.

Under proper conditions indium combines with several other elements at the same time making complex metallic compounds thereby. This property has been utilized to change the surface of some alloys. Some of the chemical relations have been studied, especially the one having to do with the reaction of indium with aluminum.

Wants Hacksaw Machine With Gadgets Left Off

"The art of making hacksaw cutting machines, in our opinion, is woefully behind the average of modern development," writes a reader of STEEL. "We would like to find a good, sturdy hacksaw machine which is made for just the one purpose of cutting soft steel and which will get the full value out of the excellent blades now being made.

"So far as the writer knows, all hacksaw machines are general purpose machines, or possibly they might better be called toolroom machines. What we would like to have is a hacksaw machine with all the gadgets and adustments left off excepting those which are necessary for production cutting of mild steel. In fact we several times have had the notion to build one."

$ $ $

Finely Ground Tools Have Longer Life Between Grinds

In the preparation of tools prior to heat treatment, states one authority, it is advisable to fine grind them. Cutting tools with finely ground edges last longer between grinds than those with coarsely ground edges, as fine grinding leaves ridges which are small in size, so that chips clear off the tool more readily.

Retention of accuracy of dimensions of heat treated tools and other parts, says the same authority, is a matter involving the intelligent use of standard heat treating equipment rather than one requiring special equipment.

$ $ $

Better Gray Iron Castings Made by Removing Gas

By a recently developed process, oxygen is removed from moltel iron with a consequently marked improvement in the composition and physical properties of the resulting castings. The iron as tapped from the cupola falls through a perforated refractory disk which breaks the stream into a spray, thus permitting the gas to escape. The metal falls into a bath of finishing slag where it is cleaned and blended. The slag is made of broken glass. It is claimed that a typical cupola charge of one-third stove plate scrap and two-thirds steel scrap which showed a deep chill and a tensile strength of 17,000 pounds in the untreated condition presented no chill and a tensile strength of 53,000 pounds when subjected to the breaking up process.

$ $ $

Developing New Type Nail

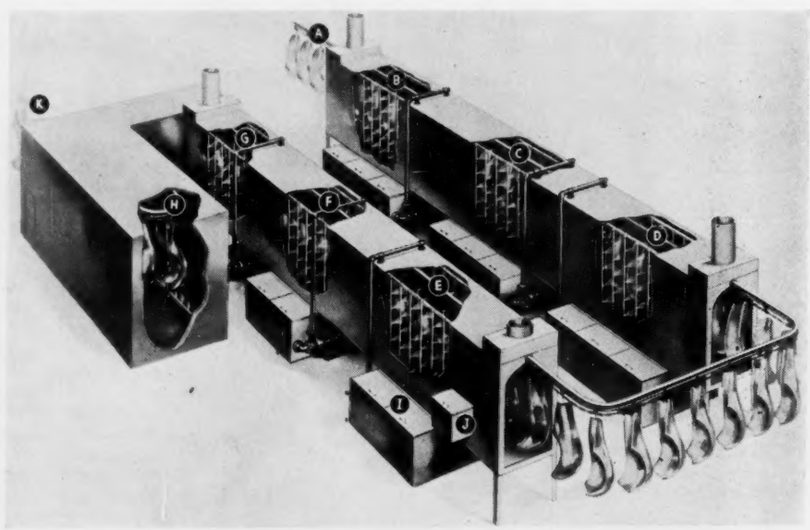
A company in the Pittsburgh district has been experimenting with the manufacture of a nail with a cupped point, designed chiefly to prevent wood splintering. Instead of a cement coating, the nail has a surface scroll effect, which, it is claimed, will give substantially the benefits of cement coating at a reduced manufacturing cost.

Chemical Rustproofing Treatment May Be Applied by Spray Method

FURTHER refinement of the bonderizing process for producing a rust-resistant phosphate coating on iron and steel as an adherent base for paint, enamel or lacquer, has been effected by the Parker Rust-Proof Co., Detroit, originator of the process.

In the new development a system of sprays has supplanted former immersion tanks, with consequent shortening of time required and amount of solution needed. Heretofore the coating has been applied by the immersion method, in still tanks, either by submerging the production on racks, or by passing the articles to be processed through a large tank on a conveyor, which required from 2 to 5 minutes in the solution, depending on the nature of the article being treated.

The spray method makes possible

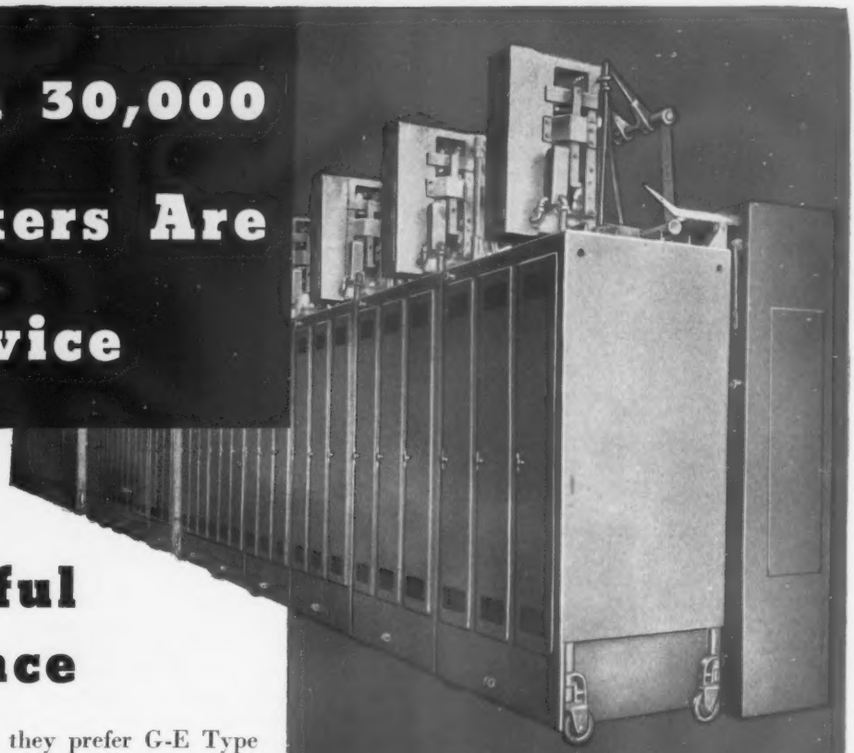


Equipment setup for spray bonderizing process, from cleaing to drying

LEGEND

A—Production entering cleaning section
B—Alkaline cleaning
C—Rinse
D—Rinse
E—Spray bonderizing section
F—Clear water rinse
G—Acidified rinse
H—Drying oven
I—Tank for bonderizing solution
J—Tank for replenishing of bonderizing solution
K—Bonderized production leaving the drying oven, ready for final finish

More than 30,000 "H" Breakers Are in Service



STEEL truck-type equipment, with Type FH breakers

35 Years of Successful Performance

OPERATING engineers tell us they prefer G-E Type FH breakers for station service. They have a reason. Thirty-five years of successful performance are behind these breakers. More than 30,000 are in service. It's a well-earned preference.

The reason? Continual improvements of a fundamentally correct design principle. Here are some of the more recent improvements:

Trip-free operating mechanisms of simple construction. No involved control wiring.

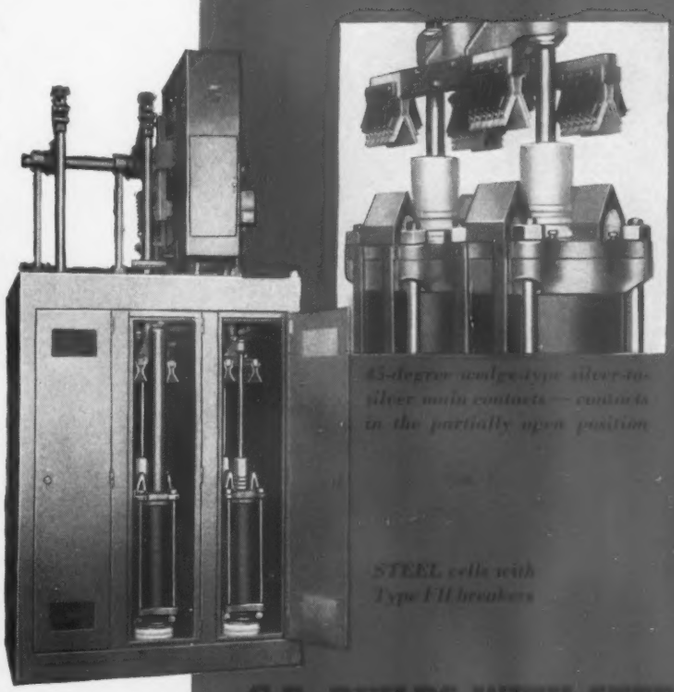
Oil-blast baffles that assure consistent performance.

Silver-to-silver main contacts, 45-degree wedge-type, special for steel-mill service, give high mechanical strength and positive contacting at all times.

These breakers are available in shipped-assembled steel-cell and truck-mounted equipments. Truck mounting provides interchangeable, removable units and complete "safety first" interlocking.

Improvements in the FH can be applied to your present breakers.

For example, oil-blast, added at small expense, will increase interrupting capacity and operating speed. Why not let us tell you more about Type FH breakers? You will find it profitable. General Electric, Schenectady, New York.



45-degree wedge-type silver-to-silver main contacts—contacts in the partially open position

STEEL cells with Type FH breakers

G.E. BUILDS WITH STEEL

GENERAL ELECTRIC

the production of phosphate coatings at lower temperatures and lower chemical concentration than has been hitherto feasible. Pressure spraying accelerates the chemical reaction and produces both a cleaning and coating action in one operation. Processing time has been reduced to 60 seconds.

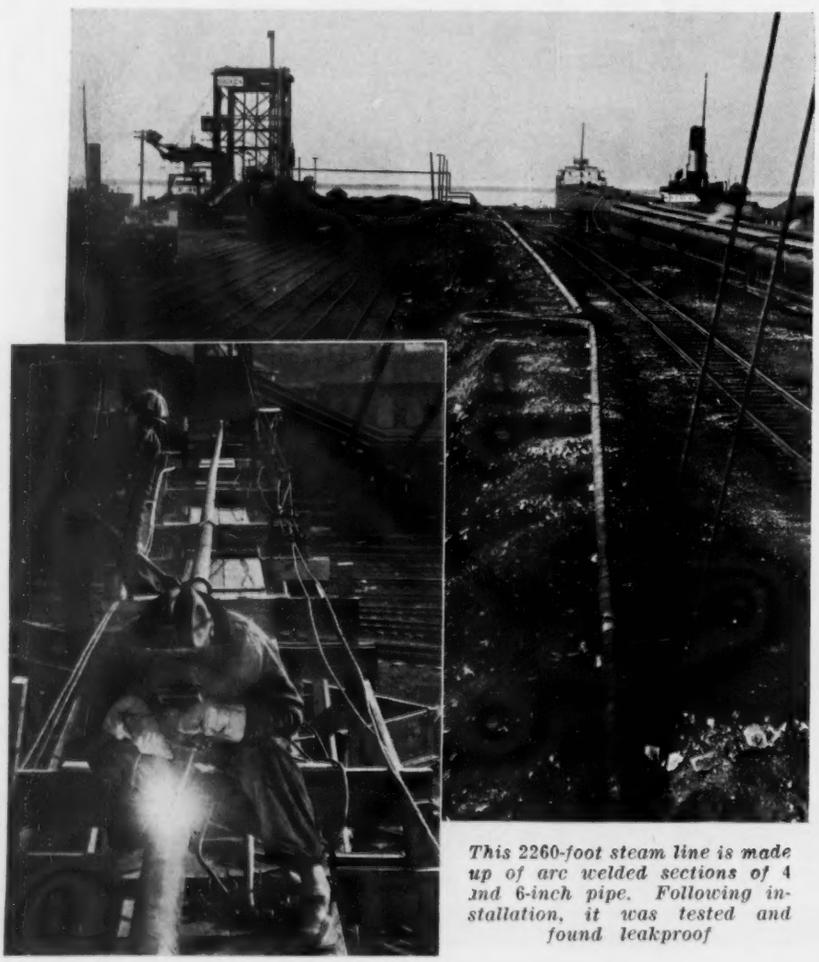
Due to the shortened processing time, equipment requirements are minimized, steam consumption is lower, less floor space is needed, and by recirculating the solution it is possible to process a given amount of work with less volume of solution.

As the work progresses on the conveyor line through the various steps of cleaning, bonderizing and rinsing, it passes a series of small standpipe sprays which force the solution against the material from all angles, flooding all areas to be treated. The equipment is assembled in a steel housing, as shown in the illustration on Page 44, with reservoirs below where solutions are accumulated before recirculation. All pumps, valves, pipes, tanks, motors and similar equipment are standard and need not be of special alloy composition.

Arc Welded Steam Line in Railroad Yard Conserves Heating Costs

A NEW 2260-foot steam line which effects savings in heating costs by allowing one generating plant do the work of three, has been installed for the Pennsylvania railroad at its lakefront storage yard in Cleveland.

Starting at a ship coal loading dock, about 110 feet of the line hangs in cables stretched between two arc welded 45-foot towers over seven railway tracks. Dropping down, the line then travels on arc welded supporting posts, straight back from the lake a horizontal distance of 1050 feet where it again climbs skyward to be carried a distance of some 313 feet across more tracks, whence it hooks directly into the station piping from the towers.



This 2260-foot steam line is made up of arc welded sections of 4 and 6-inch pipe. Following installation, it was tested and found leakproof

This line was built entirely by arc welding of 4 and 6-inch diameter pipe of 0.432-inch wall thickness and fabricated in random 40-foot lengths. All bends and special pipe fittings were fabricated in the shop and welded in place in the line. The pipe ends were beveled 45 degrees for welding.

In welding the line, the pipe ends were placed in a clamp and held to a clearance of about $\frac{1}{16}$-inch. No backing-up ring was used. The two sections of the line which are supported in cables were welded on temporary scaffolding erected for the purpose.

To take care of expansion and contraction, which amounted to 60 inches when steam at 355 degrees Fahr. was turned into the line, there are four double-U expansion joints and nine quarter bends.

In addition to the pipe itself, the towers, supporting posts, neck flanges and miscellaneous fittings were also welded by the electric arc. All erection and welding was done by Smith & Oby, Cleveland, piping contractors, using arc welding equipment supplied by the Lincoln Electric Co., Cleveland.

The line is insulated with double thickness asbestos, covered with double layers of roofing material fastened with copper wire.

Book on Bearings In Third Edition

THIRD edition of the *Timken Engineering Journal* has been issued by the Timken Roller Bearing Co., Canton, O. It is of a looseleaf type and contains 260 pages bound in a heavy three-ring binder with marginal tab index.

The first part of the book covers the design of Timken bearings with illustrations of the various types, a discussion of how they are rated, the curves and factors which apply for speed, life expectancy, engine torque, use or application and 15 typical examples of how loads are calculated and bearings selected for various applications.

A large portion of the book comprises detailed dimension sheet sections preceded by a special index enabling the user to locate any bearing by series or number. Full and half-size illustrations suitable for tracing are given for all single row bearings and each sheet carries a table of ratings for the bearing shown for various speeds.

Complete data are set forth on Timken shims, locknut and washer

assemblies, annular groove closures, tubes, etc. and a special section illustrates and describes typical methods of mounting Timken bearings, with suggestions as to closures.

The last two sections discuss cup and cone fitting practice for Timken bearings, giving definite recommendations and covering also the subject of lubrication. Specifications for lubricants are given for a wide range of applications and the use of the Timken lubricant tester is discussed.

This new book includes 54 new standard Timken bearings and a new series of six heavy-duty thrust bearings. The book lists eight new cups, two new annular ring closures and 12 new tubes. Supplementing the Journal are seven special sections on mine cars, conveyors, shop trucks, cranes, aircraft, machine tools and farm equipment.

Copies of the new book may be secured without charge by engineers, designers, libraries and executives on request to the company.

Gear Tables and Formulas In New Design Manual

Manual of Gear Design, by Earl Buckingham; 8½ x 11 inches; Parts I and II; published by the Industrial Press, New York; supplied by STEEL, Cleveland, for $2.50 each part or $4.75 for both, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The author is professor of mechanical engineering in the Massachusetts Institute of Technology, sufficient assurance of the authoritative character of the work. Part I consists of mathematical tables for the design of gears; Part II contains simple formulas for the solution of gearing problems, with practical examples to show their application. It is designed for the use of designers or producers of cut gears. It gives in condensed form various gear-tooth standards, designing formulas and tables of working data for eliminating laborious calculations.

Research on Thermocouples

Two research papers recently reprinted from the *Journal of Research* of the national bureau of standards, Washington, deal with the subject of thermocouples. One is "Standard Tables for Chromel-Alumel Thermocouples," by William F. Roeser, A. I. Dahl and G. J. Gowens, presenting 8 pages of tabular material and discussion.

The second, "Methods of Testing Thermocouples and Thermocouple Materials," by William F. Roeser and H. T. Wensel, describes test methods and the precautions which must be observed to attain various degrees of accuracy.

WELDING, et cetera . . .

BY ROBERT E. KINKEAD

IN THIS column, the author, well-known consulting engineer in welding, is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of STEEL.

On Getting the Fish

ONCE upon a time, a Japanese philosopher sat upon the shore watching the sea birds catch fish. He observed most birds would catch one good sized fish, swallow it and be satisfied. But a particular kind of a bird, since known as a cormorant, had such an overpoweringly acquisitive instinct he would go right on catching and swallowing fish until he was so full he could not walk, swim, dive or fly. Whereupon, the human fisherman would knock his head off and cut the fish out of his body. Soon all of the cormorants were killed and the fisherman had to go back to catching fish in the old slow and painful way.

Kidding the Cormorants

The philosopher called the fishermen to him and suggested it would be better to harness the acquisitive instinct of the cormorants than to kill them to get the fish. So, the next day each fisherman caught a bird which was so full of fish he could not escape and made him disgorge. The fisherman then put a ring around the bird's neck and a string on his leg. The cormorant would go out and catch a fish, but he could not swallow it on account of the ring. The fisherman would haul him in and take the fish away from him. The bird, urged by instinct, would go right out and get another fish and be hauled in again, and so on. The scheme has been working now for about 2000 years. The fisherman get the fish and the birds have a swell time.

Competitive business has much the same problem in the matter of getting leaders who can show profitable results. A leader with strong acquisitive instincts can make the business pay but he is likely to try to steal it from the owners. An honest man as a leader may be so dumb that others will steal the business from him.

An old Japanese proverb says one acquisitive man handled like a cormorant will produce more results than a hundred honest men handled like gentlemen.

81.8 Per Cent Good

Analysis of a group of 11 arc welding operators showed two exceptionally good craftsmen, one of whom holds the record of the shop for continuity of operation of his welding arc. Four men are ordinarily good craftsmen and have days when they get in as much as 4 hours actual welding time in 8 hours. Three of the remaining number need a good deal of guidance in getting their work done. The other two are just plain bums when it comes to getting their work done. Only two bums in 11 craftsmen. That is better than the human race averages. We have known for a long time that welders are superior people.

Sparks and Flashes

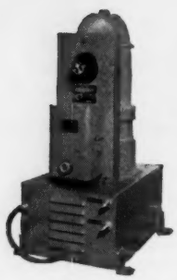
The stress concentration in a perfect fillet weld under transverse loading is never less than 2½ to 1. In an ordinary commercially made fillet weld, the stress concentration under these conditions is probably not less than 5 to 1. The answer is to avoid transverse loading of fillet welds. Transverse, in this case, means at right angles to the direction of the fillet welds.

* * *

Welds in the web a spider spins are stronger than the threads themselves. It is difficult and expensive for man to duplicate in metal the mechanical perfection of a spider web. Women have "runs" in their silk stockings because manufacturers do not know as much about welding webs as a spider does.

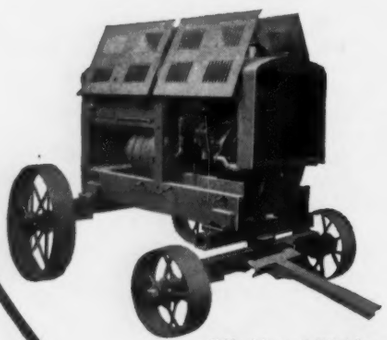
EVERYTHING you need for ARC WELDING

"Shield-Arc" Welders
A. C. or D. C. Motor Drive
200 to 600 amps.

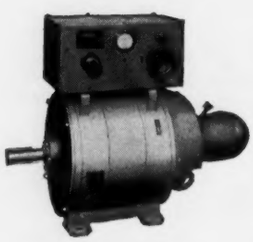


"Stable-Arc" Welders
A. C. Motor Drive
75 and 100 amps.

"Shield-Arc AC" Welders
A. C. Motor Drive



"Shield-Arc" Welders
Engine Drive
200 to 600 amps.



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Belt or Direct Drive
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IMPROVING OPEN-HEARTH FURNACE DESIGN

by William C. Buell Jr.

Chapter II — Part II

Slag Pockets

IN ORDER to develop the area necessary for the free passage of the effluent gas through the slag pockets the figures of Table XCIII are evaluated.

The total furnace gas column, a, is from Table XCII. That passing through the air system is found through the use of the ratio A_3/A_8. The vertical slag pocket area, column c, necessary to freely pass the gas is the value of column b, divided by the velocity, feet per second, taken as 15 in all cases. If this last value is deducted from the total air slag pocket area, A_9A, as developed in the illustrations, Figs. 109 to 112 and shown in column d, the area in which slag may accumulate will be the result. This value is shown under column e.

All general calculations for the determination of slag pocket size are based on the conditions as found in the air system. So long as the area of the gas system is approximately one-half that of the air side, or more, the method will be correct.

Holding Capacities Tabulated

Having thus developed the area available for the accumulation of slag without encroachment on the necessary gas flow area, the normal maximum slag holding capacity may be found as in Table XCIV. The maximum slag holding capacity, column c, is converted into terms of equivalent ingot production, column f, by the following method. The slag pocket carryover is taken at 15½ pounds per ton of ingots for producer or mixed gas firing, 15 pounds for oil or tar, 7½ pounds for coke oven or other clean gas firing. One-third of the total carryover is assumed to enter each air slag pocket in the double slag pocket arrangements and one-half the total carryover to each single slag pocket. The slag is taken to weigh 150 pounds per cubic foot.

The method of arriving at the number of heats, which may be produced before the slag encroaches on the free gas flow area, column h, is obvious, and develops some rather surprising results. The considerable difference of slag pocket size is evident in the illustrations.

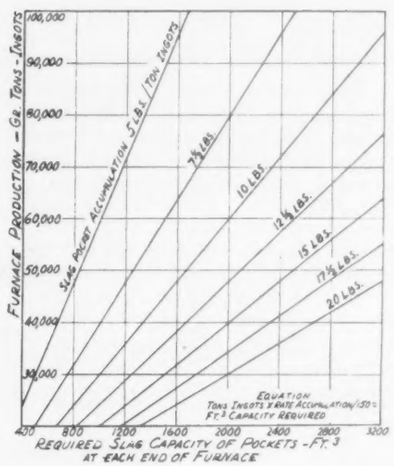

Fig. 114—Chart showing relations of ingot production, rate of slag accumulation and contingent slag pocket capacity

The improvement in the construction of the upper furnace now has proceeded to the point that 350 or more heats often are tapped before rebuilding is necessary. This development is hardly worthwhile if the furnace must be shut down after 100 heats, or so, in order that the slag pockets may be cleaned out as is the case with many of the typical furnaces. Of the furnaces listed but one, furnace J, has entirely adequate slag pockets, and three others, B, D and H, which would be reasonably adequate. Under some conditions furnaces P, L, F and M might give a campaign of medium length without a shutdown for cleaning, but all others definitely will require a mid-campaign shutdown for this purpose.

How Capacity Is Determined

Inasmuch as there is seldom any serious obstacle to the development of slag pockets of ample capacity it, therefore, would appear that the requirements in this direction are not well understood.

By the use of the chart of Fig. 114, and the prior data of this chapter, the necessary slag capacity of the pockets may be established as against any selected ingot tonnage, or length of campaign. At least, two-thirds of the required volume should be in-

Table XCIII

Slag Pocket Areas of Different Furnaces

	Furnace gas cu. ft. / sec.		Slag pocket area required to pass at 15 ft. / sec. as at 32°	Slag Pocket area, A_9A	Area Available for slag
	Total	Through air system			
	a	b	c	d	e
GROUP A					
A	443	350	61	71.7	10.7
J	384	360	62	155.2	93.2
K	405	364	62	66.6	4.6
N	535	446	78	112.0	34.0
O	583	503	88	112.0	24.0
GROUP B					
I	298	199	33	68.2	35.2
P	253	206	36	85.2	49.2
GROUP C					
G	289	207	36	56.1	20.1
L	341	234	41	100.0	59.0
GROUP D					
B	192	...	34	164.0	130.0
D	180	...	32	120.8	89.0
E	229	...	40	115.0	75.0
H	210	...	37	165.6	129.0
F	220	...	38	144.2	106.0
M	247	...	43	126.5	83.0

Table XCIV

Slag Capacity Before Encroachment on Gas Flow Area

	Maximum slag accumulation—Dimensions							
	Length feet	Area feet²	Volume feet³	Fuel*	Rate slag accumulation, pounds	Tons—Ingot production to equal volume item c	Tons per heat	Heats before encroachment
	a	b	c	d	e	f	g	h
GROUP A								
A	17.5	10.7	187	Prod. gas	4½	6,240	150	42
J	21.25	93.2	1980	Prod. gas	4½	66,000	155	425
K	17.5	4.6	81	Prod. gas	4½	2,700	158	17
N	19.5	34.0	660	Prod. gas	4½	22,000	250	87
O	19.5	24.0	470	Prod. gas	4½	15,650	300	50
GROUP B								
I	17.5	35.2	615	Oil	5	18,450	180	103
P	17.5	49.2	860	C. O. gas	2½	51,600	222	232
GROUP C								
G	17.25	20.1	346	Mixed gas	3¾	13,840	132	105
L	17.5	59.0	1033	Mixed gas	4½	34,500	150	230
GROUP D								
B	16.5	130.0	2145	Oil	7½	42,900	120	357
D	15.0	89.0	1335	C. O. gas	3¾	53,400	114	468
E	15.0	75.0	1124	Oil	7½	22,480	154	146
H	17.5	129.0	2258	Oil	7½	45,160	123	367
F	17.0	106.0	1804	Oil	7½	36,080	142	254
M	15.0	83.0	1244	C. O. gas	3¾	49,700	216	230

*Prod. gas—producer gas. C. O. gas—coke oven gas.

cluded in the air pockets, when the double pocket design is used.

The principal refractory of slag pocket construction is silica brick which is used as the hotter side of all masonry construction at the slag pocket, occasionally excepting the floor paving. Three general types of outer wall construction are found as: all silica brick, about equal thicknesses of silica and common brick, and lately silica brick with insulation. Steel plate seldom is used with the first two types but is generally a part of the later type of construction.

Center walls are always of silica brick and are sometimes found of air-cooled design as in furnace I.

The refractory details as to outer and center walls of the slag pocket walls as taken from Figs. 109 to 112 are listed in Table XCV. The 18-inch silica brick 4½-inch insulated side wall is the favorite as is the 3-foot center wall.

It is difficult to develop the thermal economics of slag pockets on account of the many possible arrangements of the downtakes and accordingly economics built around the sidewalls and end bulkheads of the slag pockets only are developed as typical of the conditions. These values are developed in Table XCVI in which the data of columns a to h, inclusive, and j, l and m, are developed from Chapters III and IV Volume 1 (to be published later.) The installed cost column, i, is developed from the unit prices of Table III and the annual cost of emission by the use of equation (4).

The areas of the wall surface are considered as four units, each about 20 feet long, 16 feet high, and the appropriate bulkheads. Three simple refractory arrangements are considered in the comparison: slag pockets with 18-inch silica walls; 18-inch silica walls backed up with 13½ inches of common brick and 18-inch silica walls with 4½ inches Class A insulation.

Bulkheads are shown as consisting of 13½ or 18 inches of bare silica brick, and the same thickness of silica brick when insulated with 4½

Table XCV

Composition of Slag Pocket Walls

Wall Refractory	Furnace
Side Walls	
18″ Silica brick	B
2′-7½″ Silica brick	E
13½″ Silica brick, 13½″ common brick	I, G
18″ Silica brick, 9″ common brick	D, M
18″ Silica brick, 13½″ common brick	A, J
18″ Silica brick, 2½″ insulation	N, O
18″ Silica brick, 4½″ insulation	K, P, L, H, F
Center Walls	
2′-7½″ Silica brick	P
3′-0″ Silica brick	A, N, O, G, L
3′-4½″ Silica brick	J, K
0-18″ Silica brick (Double wall with air cooler)	I

The side walls of slag pockets, furnaces K, N, O, P, L, B, H, F are covered with steel plate.

Table XCVI

Thermal and Economic Data of Slag Pocket Refractories

Heat flow chart	REFRACTORY						Thermal resistance	Installed cost*	Emission		Temperature, degrees Fahr.	
	Silica		Common		Insulation†							
Fig.	thick inches	γ	thick inches	γ	thick inches	γ	R	i	Btu/ft.²/hr.	Cost per year	Max. of insulation	Outer surface
a	b	c	d	e	f	g	h	i	j	k	l	m
SIDEWALLS—(Taken as 1280 square feet*)												
19	18	1.65	...	...	...	...	1.65	$3250	1240	$3560	...	445
19	18	1.40	13½	2.00	...	...	3.40	5200	660	1895	1575	325
20	18	1.35	...	...	4½	2.5	3.85	4192	575	1650	1725	290
BULKHEADS—(Taken as 400 square feet*)												
19	13½	1.20	...	...	...	...	1.20	$760	1650	$1480	...	510
20	13½	1.00	...	...	4½	2.3	3.30	1050	660	590	1840	210
19	18	1.65	...	...	...	...	1.65	1020	1240	1110	...	445
20	18	1.35	...	...	4½	2.5	3.85	1320	575	515	1725	290

*Total for one complete furnace. †Class A.

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inches of Class A insulation, the preferred material for all insulation at the slag pockets.

The interface temperatures, column 1, between the two materials are high, and accordingly Class A insulation only should be used at the slag pockets. The arrangement of the 18-inch silica and 13½-inch common brick wall requires no plating but all other side walls should be plated. Plating will increase the first cost over the common brick arrangement about $750 but as the plate will last indefinitely, its cost is not considered in the economic summary in which only the refractory items that must be renewed from time to time are taken into account. The economic summary is presented in Table XCVII. It is taken in the first case that the slag pocket walls will be rebuilt completely after two campaigns of six months each, and in the second case after two years of operation or four campaigns. This likely will cover the range of practice in different plants. Bulkheads are presumed to be replaced after each campaign.

The values are developed by appropriately combining the data of columns i and k, Table XCVI.

Economy Is Effected

The figures of Table XCVII demonstrate conclusively the economy of 18-inch silica, insulated side walls, particularly as refractory practice is improved, and 13½-inch insulated bulkheads.

Another advantage of the 18-inch silica, insulated side wall, will be the increase of slag pocket volume possible from its inclusion. This will be the recommended construction.

Examination of Figs. 109 to 112 indicate the variety of bottom paving in use.

As the supporting concrete foundation and the earth on which it rests collectively form an excellent insulation, the arrangement of the bottom refractories are important only for the purpose of insulating the concrete foundation to prevent its decomposition. Nothing is better for the bottom than an air-cooled pad about 15 inches deep of either first or second grade fire brick. In all practices a false floor of old brick or sand or both will be laid on the permanent brickwork which effectively will protect the air-cooled pad.

Inasmuch as the design of the steel work supporting the superstructure and binding the slag pockets through inherent limitation is fundamentally the same in all cases, the details of the arrangements of the steel structures as found in the typical furnaces is not given.

All slag pocket steel work consists essentially of a steel ring of considerable strength at the bottom. This passes under the fantails, entirely surrounds the slag pockets at the sides and ends and is anchored to the concrete foundation which should be free from the furnace piers or building footings.

The buckstays, which also act as columns to support the superimposed loadings, are erected on this lower ring. Conveniently, there may be four buckstays at each of the sides, three buckstays at the front in double slag pocket design, and two in the single design. It is not possible to include buckstays at the back on account of the fantail connections.

Supports Second Ring

The buckstays support a second ring which entirely surrounds a slag pocket at its top passing above the fantails. The buckstays of the upper furnace end are framed into this ring. (See Fig. 64 for the upper steel arrangements, and Fig. 66 (STEEL, Aug. 14, 1933) for the loading conditions of the upper slag pocket ring.)

The cross sectional design of the slag pockets is likely to be greatly limited longitudinally by the space available between building column footings and the furnace piers, and by the consideration of upper end design. Laterally it may be limited by the width of the ends of the furnace above the charging floor, and in elevation by the depth to which the masonry may be conveniently carried below grade. It also may be limited to the space in the clear between grade and the supporting girders of the charging floor, as well as to the desirable or permissible angularity of the uptakes.

Of the group A slag pockets, Fig. 109, particular attention is directed to the liberal design of furnace J. The design of the slag pocket of furnace L, Fig. 111 is also fairly liberal. These are the only cases, in the typical slag pocket design, that warrant favorable comment. All other designs are much too cramped.

The center wall cooler of furnace I, Fig. 110, could be dispensed with and its equivalent area added to area A_2.

Single slag pockets as shown for the group C furnace, Fig. 112, are through the omission of the center wall and the fuel uptake easily developed to much greater relative areas and volumes, and the general designs of the slag pockets of furnaces B, H and F especially are to be commended both on account of the volumes developed and the simplicity of the brickwork. The semicircular arch is common for the roof construction of all double slag pockets and is convenient and economical to use. However, if the semicircular arch was to be used on the wider single pockets, the encroachment of area A_5 would be considerable and it is customary to use a sprung arch.

(To be continued)

Table XCVII

Economic Summary Slag Pocket Refractories

Time period	1 Year	2 Years
Number of campaigns	2	4
	Cost Refractory and Radiation	
SIDEWALLS		
18″ Silica	$6,810	$10,370
18″ Silica and 13½″ Common	7,097	8,990
18″ Silica and 4½″ Class A ins.	5,842	7,492
BULKHEADS		
13½″ Silica	$3,000	$6,000
13½″ Silica and 4½″ Class A ins.	2,690	5,380
18″ Silica	3,150	6,300
18″ Silica and 4½″ Class A ins.	3,215	6,430

S. A. E. Distributing Report On Standardization Work

Last autumn C. W. Spicer, chairman of the general standards committee of the Society of Automotive Engineers, prepared for the president and council of the society a report reviewing and describing in a general way the development of engineering standards for the automotive industries and what this work has meant to them.

With publication of the 1935 edition of the *S.A.E. Handbook*, of which the report forms a part, the report itself is now available in pamphlet form for general distribution. Copies may be obtained by addressing the Society of Automotive Engineers, 29 West Thirty-ninth street, New York.

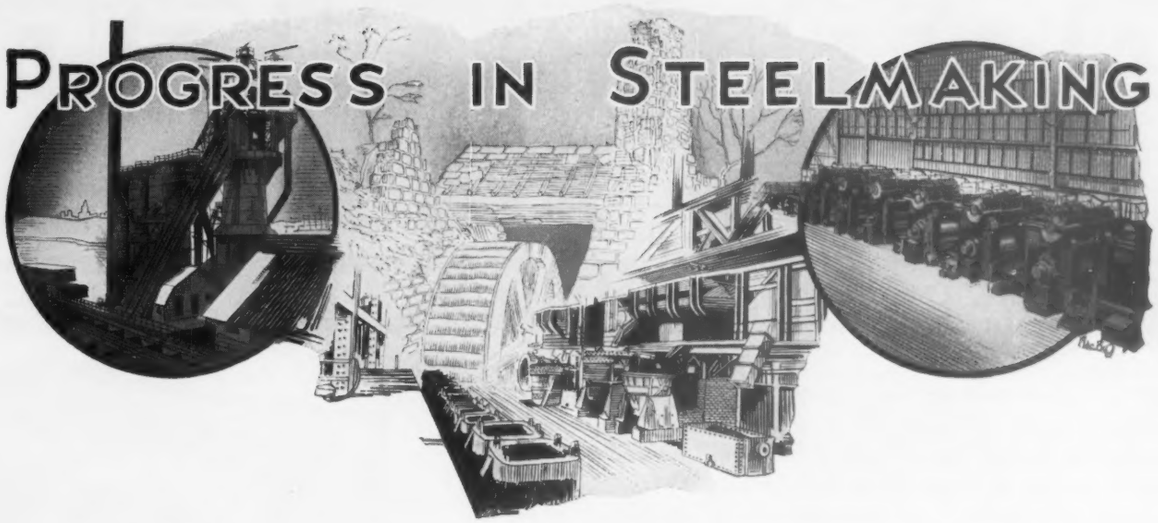
To Award Prizes for New Uses of Acetylene

Word comes from Paris of the second international contest for development of the uses of carbide and acetylene, open to inventors and technicians of all countries, to reward research work on new uses and improvement of old uses for calcium carbide and acetylene in oxyacetylene welding. The competition, extending from May 1, 1935, to March 1, 1936, is sponsored by French manufacturers of calcium carbide and le Syndicat International du Carbure de Calcium, Geneva, Switzerland.

Judges will award four prizes—first, 25,000 francs; second, 15,000 francs; and third and fourth, each, 5000 francs.

All information concerning rules and regulations of the contest may be obtained by addressing the general secretary of l'Office Central de l'Acetylene et de la Soudure Autogene, 32 Boulevard de la Chapelle, Paris.

PROGRESS IN STEELMAKING



Studies Ore Reclamation

Experiments to utilize low-grade domestic iron ores now are under way in Germany. In the Renn process the ore is mixed with either powdered coal or coke breeze in a revolving kiln in the ratio of 30 parts fuel to 100 parts ore. The reduced metal imbeds itself in the slag which is crushed and screened. Particles of metal smaller than 0.039-inch are recovered by magnetic separation and returned to the kiln. Results indicate that from 90 to 95 per cent of the iron in the ore may be recovered in the form of lumps containing about 98 per cent iron and from 0.5 to 1.5 per cent carbon.

◆ ◆ ◆

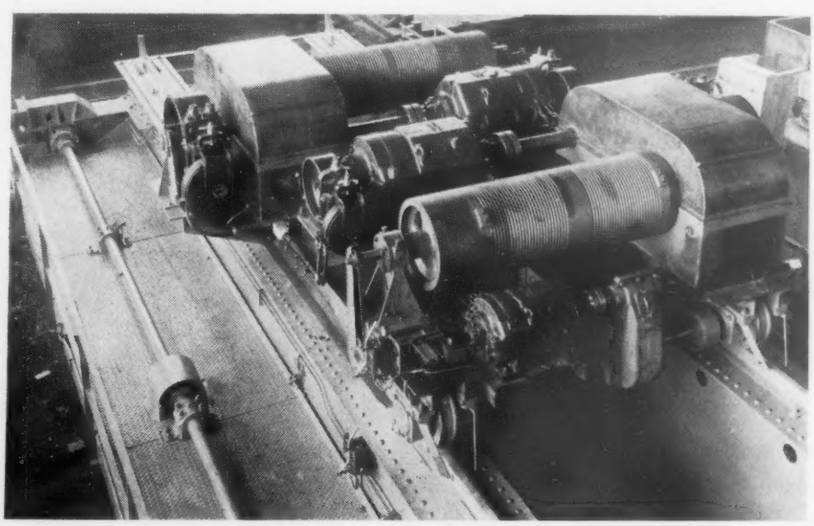
Devises Roll Changing Rig

Handling the withdrawal of the complete roll and bearing assemblies of either 2-high or a 4-high mill is facilitated by a newly developed roll changing rig. The unit is built with a sliding head which is driven through a double-worm reduction by a reversible motor and operates on a pair of racks. The rack pinion mounting is designed so that the load is equalized on each pinion to eliminate jamming. The rig is built with lifting lugs for transferring from one mill stand to another. Provision also is made to assure lining up the unit with the mill so that when the rolls are entered into the mill they will be in alignment with the housing windows.

◆ ◆ ◆

Minimizes Wear of Crane Parts

ONE SHOT LUBRICATES ALL PARTS: Crane operators formerly were obliged to travel over footwalks oiling here, oiling there with long spouted cans but today conditions up on the crane bridge are changed. No longer is an operator required to climb a ladder leading to the bridge walkway to "oil-up". Lubricating engineers have changed all this. A typical example of modern construction is the "Tiger" mill-type trolley of 40 tons capacity, with a 20-ton auxiliary hoist, shown in the illustration below. The unit recently completed by the Whiting Corp., Harvey, Ill., for a steel plant in the Chicago district is equipped throughout with a one-shot lubricating system whereby all parts requiring lubrication are satisfied simultaneously without requiring the crane operator to leave his cab



Reduces Radiation Losses

Insulating blast furnace hot blast mains and bustle pipe with a 4½-inch course of insulating brick laid up between the shell and a 4½-inch fire brick lining effects a reduction of 60 to 70 per cent in the radiation loss compared with a system lined only with a 9-inch course of fire brick.

◆ ◆ ◆

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No primer is required for a newly marketed flexible lacquer which will not chip, flake or peel when applied to the surface of cold rolled strip steel. When strips coated with the lacquer are bent backward and forward and then twisted and turned, the coating shows no evidence of cracking. Permanency of adhesion is in the product which with modifications, sprays, dips or coats and air-dries quickly.

◆ ◆ ◆

Handles All Type Ingots

Equipped with a detachable ram, a new ingot stripper crane, recently installed by an eastern steelworks, is designed to handle all types of ingots. With the ram attached to

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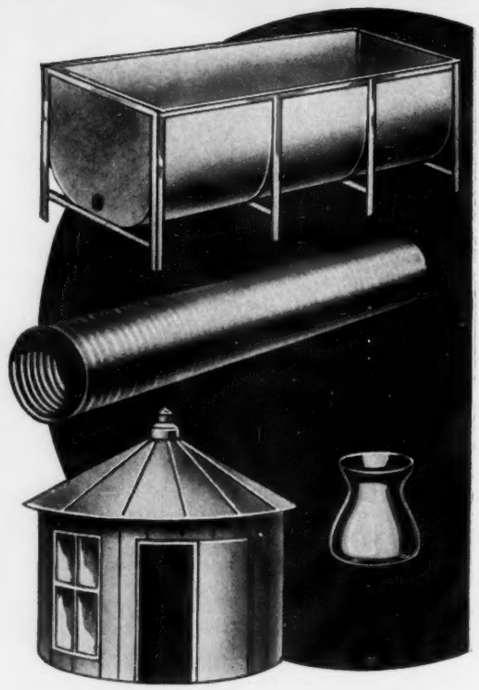

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STEEL SHEETS AND WIRE PRODUCTS

the lower end of the stripping mechanism, the stripper is used to strip conventional molds from the ingots and place them on cars.

To extract or loosen a big-end-up ingot from its mold, the ram first is removed, being set aside in its normal position relative to the machine, in a conveniently placed rack. Regular stripping tongs, provided with suitable lugs, are used to hold down the mold. Heavy gripping tongs, with detachable bits, then grip the protruding hot-top end of the ingot, and pull it loose from the mold. An ingot may be lifted entirely out of the mold or only loosened so it can be transferred to the soaking pits by a charging crane.

The location of these gripping tongs is a new and unique feature of this part of the mechanism. These open in the same direction as the long, stripping tongs at right angles to the car track. The tongs, therefore, can loosen an ingot and then pass on to the next without having to be lifted over the ingot or mold. In case it is desired to loosen a big-end-up ingot, without hot top, the ingot and mold are carried by the stripping tongs to an auxilliary rig and are deposited on a stationary base through which projects a ram, mounted in a movable U-shape frame. The heavy gripping tongs serve in this case as holding down members. The stripping tongs, having double engagement lugs are moved outwardly into engagement with the lugs on the U-shaped frame. Pressure being applied, the ram moves upward, and pushes the ingot loose. Mold and ingot then are placed on a car to be moved forward to the soaking pits. The equipment has a lift-load of 15 tons and a stripping pressure of 150 tons.

♦ ♦ ♦

Markets Steel Floor Plate

Skid resistance from every angle is incorporated in the design of a newly marketed floor plate. All lugs have a flattened top surface. The plate cleans readily and drains freely, there being no pockets in which water can accumulate.

A-C Electric Pickling System Involves Use of Organic Addition Agent

IN THE pickling of blooms, billets, plates, sheared sheets, strip steel, rods, wire, tubes or forgings, a new method developed by the Ferro Enamel Corp., Cleveland, appears to have interesting possibilities. Known as the Ferrolite system, it uses alternating current in the bath but needs no direct connection between the work and the electric circuit. To the normal inorganic acid bath (sulphuric, muriatic or nitric) is added an organic material (Ferrolite) which has high affinity for oxides of iron. Ionization of the bath by the alternating current stimulates the pickling reactions.

Spent Liquor Is Discarded

In the steel industry today, a sulphuric acid pickling bath is discarded when the iron—present as ferrous sulphate—reaches the point where the pickling rate slows down appreciably. Large quantities of free acid are still present but must be lost to maintain a normal production schedule, although as noted in STEEL for April 15, p. 57, methods have been devised for the economical recovery of sulphuric acid from these spent pickling liquors.

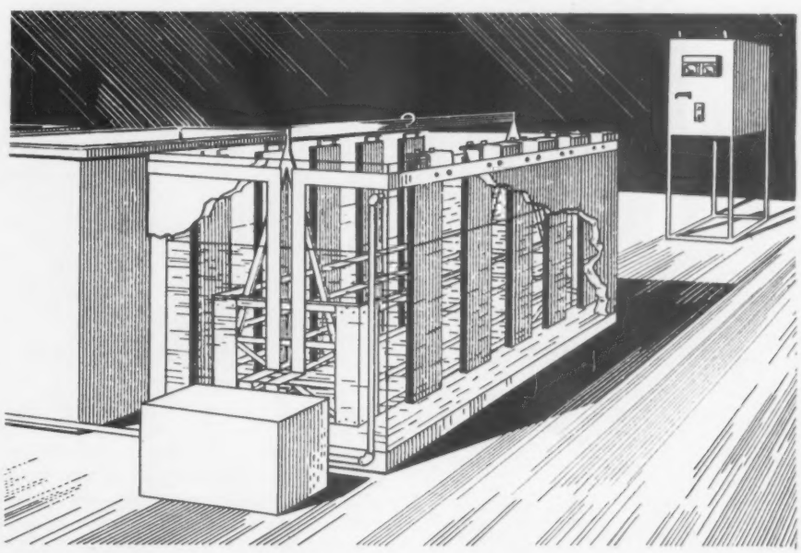
In the new system, the ferrous sulphate is oxidized to ferric sulphate and this combines with the normal salt of gluconic acid, ferrous gluconate, to form ferrigluconic acid, which has an iron content of approximately 19.6 per cent. This permits the sulphate ion to combine with the hydrogen present and form sulphuric acid.

Three distinct benefits are claimed to be obtained from this organic-inorganic reaction: (1) Longer life of the pickling solution due to the destruction of the ferrous and ferric sulphate present; (2) lower acid cost, due to the regeneration of sulphuric acid in the tank; and (3) a better finish obtained more rapidly on the pickled metal, due to the breakdown of bonding oxides underlying the Fe_3O_4 as they combine with the free organic acid to form ferrous gluconate.

The method utilizes alternating current successfully, due to the nature of the reactions taking place in the bath. During the anodic half of the wave, the work pickles rapidly because of the high sulphate ion concentration. During the cathodic interval, the organic ion concentration stimulates the organic attack. As both reactions are equally vital to successful operation, the sine-wave form of 60-cycle alternating current is utilized to full advantage.

Specially designed, dense graphite electrodes are spaced at calculated intervals along the sides of the tank, as shown in the illustration each tank side then being connected to one leg of a 6 to 12-volt transformer. Current densities calculated at 6 to 12 watts per gallon of electrolyte are used. The installation can be made in any pickling tank which does not have a metallic lining and in which it is possible to install the electrodes with enough clearance to avoid contact with work going into the tank.

The system is a patented process but there are no royalties connected with it. With each shipment of the Ferrolite addition agent, the company licenses its use, automatically and without charge. The method can be applied to any type of still or agitated batch pickler or to any continuous pickler.



Sectional view of typical alternating-current pickling installation, showing how graphite electrodes are mounted along sides of tank

NEW EQUIPMENT

To STEEL last week came the following new equipment announcements:

Zee lock side milling cutters, Ingersoll Milling Machine Co., Rockford, Ill.

General purpose machine, International Machine Tool Co., Indianapolis.

Dust respirator, Pulmosan Safety Equipment Corp., Brooklyn, N. Y.

Vertical arc welder, J. D. Adams Mfg. Co., Indianapolis.

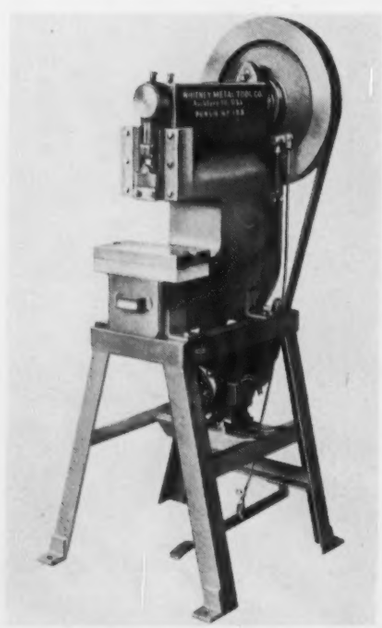
Convected air gas heated tempering furnaces, Despatch Oven Co. Minneapolis.

Descriptions of the above items will appear in this department soon.

Heavy-Duty Punch—

Whitney Metal Tool Co., 91 Forbes street, Rockford, Ill., recently brought out an all-steel plate welded punch press. The unit, shown herewith, comes equipped with a ¾ horsepower motor, 110 or 220 volts, so that it can be plugged into an electric light socket if so desired. Motor ratio is 3 to 1 and the stroke is 135 revolutions per minute.

Other features include adjustable brake shoe on main shaft; safety device to prevent ram from descending when changing punches and dies; and a metal drawer to catch slugs. The punch also can be furnished with automatic stock feeding devices. It is the intention of the company to make this machine in a back gear type for drawing work, with strokes as low as thirty-five per minute.

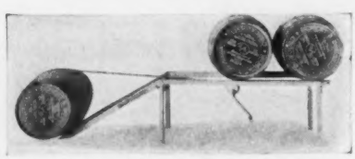


Whitney punch embodies steel plates and welded box type design

♦ ♦ ♦

Drain Rack—

Barrett-Cravens Co., 3255 West Thirtieth street, Chicago, has developed a drain rack which will find use in industrial plants where barrels and drums are drained of their contents in small amounts. The unit, shown herewith, is made 18 to 24 inches high and as many barrels long as specific needs require.



Barrett-Cravens drain rack

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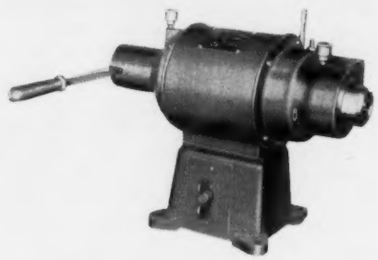
Speed Lathes—

Schauer Machine Co., 905-907 Broadway, Cincinnati, recently added new models to its line of speed lathes for lapping, finishing or polishing operations on small parts where high daily output is required. The accompanying illustration shows a type NAIC lathe with hand-operated collet chuck. This unit also can be arranged for automatic control by means of a foot pedal. Depressing the pedal contracts the collet and starts the motor. Releasing the pedal cuts off the power, applies the brake and expands the collet.

Construction embodies a two-speed totally enclosed dust-proof motor, automatic brake, ball bearings and necessary chucking equipment. The lathe is powered with a totally enclosed, ½ horsepower, two speed motor to provide 1350 and 2700 revolutions per minute on direct current, 1750 and 3400 revolutions per minute or 900 and 1800 revolutions per minute on alternating current.



Type NAIC Schauer lathe with hand-operated collet chuck

High or low speeds are selected by means of a switch in the motor base. The operating current is cut in by a slight backward push on the rear vertical lever and is cut off and brake simultaneously and automatically applied by a forward movement of the lever. Collets can be changed easily and quickly. Wheel or step chucks also can be provided for the polishing or finishing of rings such as ball bearing races, spinning rings, etc.

♦ ♦ ♦

Welding Fixture—

Harnischfeger Corp., Milwaukee, recently perfected a new type welding fixture for easier handling of circular pieces. To enable the operator to weld continuously in a downward position, the turntable is equipped with an electrical rotating mechanism with gear shift and variable speed motor control. Speed can be accurately regulated from 3

New Harnischfeger fixture designed to reduce welding time

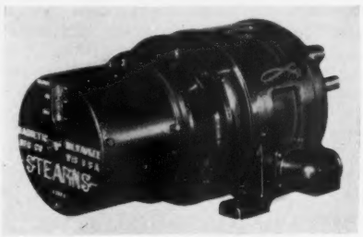
to 18 inches per minute in either direction at the circumference of the 42-inch table. Thus, for example, in welding a circular piece, the operator may hold the rod in a steady position as the work passes beneath it at the desired speed.

The turntable can be tilted from one side of the base to the other or held in a horizontal position. Recently, fabricating time on a huge gear was reduced from 32 to 13 hours when sixty-five ⅜-inch rods were deposited in two hours. Although primarily designed for handling circular shapes, it also handles other unwieldy pieces. Known as the "RT", this new fixture, shown on page 56, is offered in various sizes to handle loads up to 4 tons.

♦ ♦ ♦

Magnetic Disk Brake—

Magnetic Mfg. Co., Milwaukee, recently brought out a magnetic disk brake, known as style DS. The unit, shown herewith, is simple in design and construction, with a minimum number of moving and wearing parts. It can be supplied for either alternating or direct-current operation, in



Stearns magnetic disk brake for floor or motor mounting

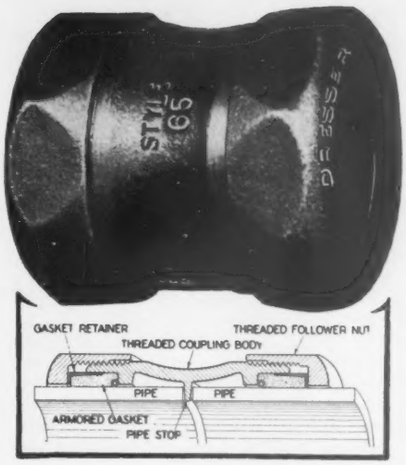
five sizes ranging from 10 to 90 foot pounds torque for continuous duty operation. Design of the brake includes manual release; lining wear indicator; constant torque provided at all times and not subject to variation from lining wear; simple and practical adjustments for torque and lining wear; and easy replacement of linings when necessary.

♦ ♦ ♦

Pipe Coupling—

S. R. Dresser Mfg. Co., Bradford, Pa., recently introduced a new type pipe coupling which simplifies joint making. Making a joint simply involves inserting the pipe ends into the coupling (which comes assembled) and then tightening two threaded octagonal nuts. As the nuts are tightened, two resilient "armored" gaskets are compressed tightly around the pipe, gripping it with tremendous force and giving a positive seal.

Other advantages, according to the manufacturers, are these: the pipe need not be cut to exact lengths;



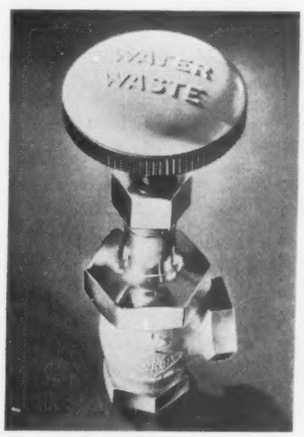
Dresser compression coupling permits deflection of pipe in joint

joint making in cramped quarters is simplified; repairs on old lines can be quickly and easily made; and the joint is suitable for exposed lines because of its compact appearance. These couplings, shown herewith, are supplied, black or galvanized, in standard steel pipe sizes from ⅜-inch inside diameter to 2 inches inside diameter inclusive. It appears that this new coupling will have a wide application on both inside and outside piping on gas, water, oil, air, chemical and industrial lines under high and low pressures.

♦ ♦ ♦

Colored Valve Wheels—

Jenkins Bros., Bridgeport, Conn., recently adapted the indexing value of color to a new type of valve wheel to designate valves for steam, water,



Jenkins valves utilize color indexing

air, or any other fluids and gases. The wheels as shown herewith, are molded of plastic materials, are available in five standard colors, blue, red, green, gray and black and are offered unmarked or with five standard service markings molded in relief. The company also will make up wheels of special color or with special markings.

♦ ♦ ♦

Tannic Acid Atomizer—

DeVilbiss Co., Toledo, O., recently developed a special tannic acid atomizer to facilitate prompt and effective treatment of burns sustained by workmen around industrial plants. The device, shown herewith, offers particular speed and convenience in first-aid work by the incorporation of three major features: A wide mouthed bottle to facilitate filling, stirring, and cleaning; acid and water levels clearly

DeVilbiss atomizer for applying tannic acid to burns

marked on the bottle to make correct mixing easy; a wide volume of soft spray giving quick and effective application over a wide area.

♦ ♦ ♦

Replaceable Air Filter—

American Radiator Co., New York, recently placed on the market a replaceable air filter designed to reduce power costs in the operation of air conditioning equipment by establishing uniform resistance for air flow. The new unit is made of corrugated fibre board with cellular passages set at an angle so that air scrubs along the sides of the passages and dust is absorbed by a special compound with which the board is coated. It can be used in air conditioning installations, ventilating systems, warm air furnaces, window ventilators, air compressors and internal combustion engines.

Three models are offered, one for high efficiency industrial applications, another for ventilating or air conditioning systems where outside air has to be cleaned, and a third for use where a major part of the air filtered is recirculated air. In operation, each dust particle is saturated with the special compound used as a coating and becomes a medium for absorbing more dust, thus assuring long life to the filter.

New Trade Publications

BLAST GATES—W. S. Rockwell Co., 50 Church street, New York, in bulletin No. 351 describes its air-tight blast gates, complete with illustrations and data tables.

VALVES—Parker Appliance Co., Cleveland, has published bulletin No. 38 giving detailed information on design, size, etc., of its line of valves of various types.

FLOOR PLATES—Inland Steel Co., First National Bank building, Chicago, has issued a folder on its four-way floor plate, light and heavy. Sizes, gages and extras are included.

GEARS—Medart Co., 3500 DeKalb street, St. Louis, has published a catalog on its line of gears and sprockets. Attachments, chain, roller chain wheels and clutches are illustrated and described.

MIXERS — Patterson Foundry & Machine Co., East Liverpool, O., has published an illustrated catalog on its equipment for mixing various types of liquids. Several styles of stirrers are illustrated.

TRAVELING CRANES — Whiting Corp., Harvey, Ill., has issued a folder on its low-head type traveling crane for hand or electric power operation. Features of design are discussed and a partial list of users is included.

COLD-DRAWN STEEL — Wyckoff Drawn Steel Co., Pittsburgh, is circulating a leaflet calling attention to the value of the right steel in the right place, especially for automatic screw machine production.

PYROMETERS — A surface pyrometer, designed in two styles to permit temperature determinations on flat or curved surfaces, is described in a folder by the Pyrometer Instrument Co., 103 Lafayette street, New York.

WELDER—J. D. Adams Co., Indianapolis, in a current bulletin describes its line of vertical direct-current arc welders. Illustrations show the welder and details and features of design are fully explained in the text.

FURNACE—Despatch Oven Co., Minneapolis, in bulletin No. 40 describes its convected air tempering furnaces, heated by gas. Illustrations show typical installations, action of this type furnace is described and data tables are included.

SLITTING MACHINES — Cameron Machine Co., 61 Poplar street, Brooklyn, N. Y., has issued a catalog of its slitting machines for use with a long list of materials and its roll winders for winding the resulting product. It is illustrated.

ROLLER CONVEYORS—A folder showing roller conveyor details has been published by the Logan Co., Louisville, Ky., Features such as the hexagon shaft, dust-protected bearings and pressure-lubricated bearings are stressed.

PUMP—Allis-Chalmers Mfg. Co., Milwaukee, in bulletin No. 2199 describes a pumping unit as wide application, which finds use in many branches of industry. It is a centrifugal pump, single suction, single stage with squirrel-cage motor, designed as one unit.

PICKLING — International Nickel Co., Inc., 67 Wall street, New York, has prepared a booklet "Equipment Design for the Pickle House," in which claims are set forth for monel metal as especially suited to meet requirements of strength, corrosion, and easy fabrication.

PORTABLE CRANE—Silent Hoist Winch & Crane Co., 762 Henry street, Brooklyn, N. Y., has prepared a well-illustrated booklet on its Krane Kar and Krane Krawler. Units consist of a boom mounted on a gasoline driven truck or crawler and provide utility for wide range of application.

CUPOLA CONTROL—Edwin S. Carman Inc., Lee road at Mayfield, Cleveland, has issued a booklet on a cupola control system which utilizes a control gage indicating the amount of blast required for complete combustion in the melting zone from temperatures of 20 degrees below zero to 100 degrees above, with changing barometer over the entire range.

CHAINS — Baldwin-Duckworth Chain Corp., Springfield, Mass., has issued a catalog on chains and sprockets for power transmission, conveying and elevating. The book describes the company's standard roller chains, parts and attachments, multiple chains, extended pin chains, non-corrosive chains and block chains. A 20-page section is devoted to practical engineering data on chains.

LIFT TRUCKS — Elwell-Parker Electric Co., 4120 St. Clair avenue, Cleveland, has issued a new booklet "This New Industrial Pick-Up," which contains more than 50 photographs of operating installations. Considerable space is devoted to the subject of high tiering and cutting material-handling costs.

REFRACTORY INSULATING BRICK—Charles Taylor Sons Co., Cincinnati, has published a booklet discussing the advantages claimed for its refractory insulating brick. Results of tests and other engineering data and characteristics of the material are presented. Uses are suggested for electric furnaces, annealing furnaces, enameling furnaces, heat treating furnaces, core ovens and baking ovens.

SPRAY EQUIPMENT—Binks Mfg. Co., 3114 Carroll avenue, Chicago, manufacturer of industrial spray appliances and water cooling equipment, has issued several bulletins descriptive of its products. No. 5 is devoted to spray nozzles with complete data and selection charts, covering nozzles for air conditioning, water cooling and similar uses; No. 535 describes spray equipment for the ceramic industry, including spray guns, reclaiming booths, exhaust units, hose and connections, and other equipment.

Continuous Heating Furnaces

(*Concluded from Page 34*)

calling for expensive construction, particularly in the air heater; but if the back end of the furnace is actually put to work as suggested, fewer or smaller furnaces will be required to do the present work, and the total investment for heating apparatus for a given capacity may not be much greater than before. Should it develop that the investment is greater, it is likely superior heating and reduced fuel consumption, both of which may be reasonably expected, even under hard driving, will conspire to make the investment profitable.

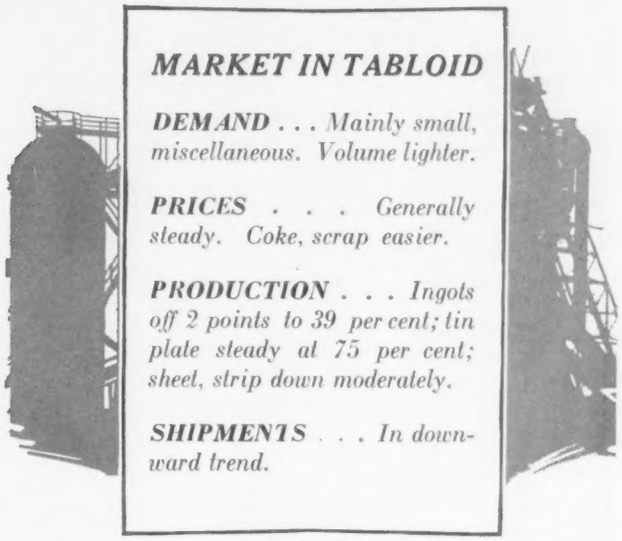
Thus we conclude the ideal furnace is one in which the primary consideration is the transfer of heat to the steel and not necessarily the reduction of waste gas temperatures; one in which the available heat transfer in any section is limited only by the ability of steel itself to conduct heat throughout its cross-section; one equipped with highly developed mixing and proportioning burners by means of which the combustion process and heat liberation in any section can be controlled at will, without affecting the conditions in any other section, and finally, one equipped with heat conserving apparatus such as regenerators, recuperators or both, capable of withstanding high temperatures, and able to reduce the waste gas heat loss to a nominal quantity. Add to this the use of brick capable of reducing the wall and roof heat losses to a minimum, and in some manner obviate the use of water cooled skid pipes and the result is a furnace capable of operating at highest conceivable capacity and at a low fuel rate. Positive regulation of furnace atmospheres and temperatures at each location will give maximum opportunity for as much improvement in quality of the heated stock as is possible for a furnace to effect.

Probably no further demand can be made of a continuous furnace for slabs or billets, unless all these refinements must be obtained at reasonable cost. This bridge may best be left uncrossed until approached, but it is possible that quantity production and competition will help solve this ultimate problem.

ADVERTISING PAGES REMOVED

Seasonal Decline Continues; Rate Down to 39

Scrap and Coke Prices Easing Off; Negotiating Large Structural Tonnages



MARKET IN TABLOID

DEMAND . . . *Mainly small, miscellaneous. Volume lighter.*

PRICES . . . *Generally steady. Coke, scrap easier.*

PRODUCTION . . . *Ingots off 2 points to 39 per cent; tin plate steady at 75 per cent; sheet, strip down moderately.*

SHIPMENTS . . . *In downward trend.*

MID-YEAR finds activity in the iron and steel market following a normal course and subsiding gradually.

The year so far shows much less gain over the first half of 1934 than that period developed compared with 1933, yet steel production totals up to about 55 per cent of the all-time peak in the first six months of 1929.

Currently, the industry is subsisting almost entirely on small, miscellaneous orders, the volume of which is holding up unusually well, providing a cushion against a sharp decline. Without support from important automobile, railroad and structural tonnages, steelworks operations last week dropped only 2 points to 39 per cent The rate is the lowest this year, level with that in the closing week of 1934.

Despite the drab appearance of the market, however, the very lack of large-scale buying coupled with certain definite requirements just ahead is inspiring steelmakers to confidence in a vigorous fall upturn. With the early introduction of new automobile models, and the release of government funds for public works, they expect a definite upward trend by August.

From now on automobile production will be keyed closely to retail sales, with a succession of relatively small iron and steel purchases through the remainder of June, and in July. The industry looks for a reasonably good summer season. Preliminary work on new models has progressed to a point where makers are taking bids on parts, and while no extensive retooling program is yet contemplated, some substantial orders have been placed for dies. Assemblies last week increased by 3300 to 91,000.

Structural shape awards showed little change at 6255 tons. Most of the railroad buying was done in Canada, the Canadian National ordering 80,000 tons of rails, Canadian Pacific 7000 tons. Wheeling & Lake Erie purchased 1100 tons.

Prices are expected to receive their first test on negotiations under way for large tonnages of structural shapes and reinforcing bars. While sellers themselves report evidence of cutting of code levels on steel piling in a few instances, these are not yet confirmed. Nut and bolt producers have granted an additional 10 per cent discount to jobbers for carload quantities.

In raw materials, beehive furnace coke is down 20 cents a ton to $3.40, and scrap markets have declined 25 to 50 cents a ton.

Bituminous coal and Lake Superior iron ore mine strikes scheduled for this week, apparently timed to influence labor legislation, are of little influence on the market. No matter what develops consumers are amply fortified with stocks. Available reserves of coal are estimated at 68,000,000 tons, so heavy that if miners should fail to strike, producers may shut down.

Pig iron shipments have fallen off considerably. At Pittsburgh the Standard Sanitary Mfg. Co. has reopened its plant, idle for three years, providing a better outlet there, and a Pittsburgh district pipemaker has placed several thousand tons of bessemer iron for third quarter.

STEEL's London correspondent cables that the British steel federation and the European steel cartel have entered a five-year agreement, whereby imports of 670,000 tons of steel from the Continent into Great Britain will be permitted the first year, 525,000 tons each year thereafter.

Eastern Pennsylvania steelworks operations last week advanced ½-point to 30 per cent. Chicago dropped 2 to 41; Birmingham 22 to 30½; Cleveland 3 to 51; Youngstown 6 to 42; Buffalo 2 to 35. Other districts were unchanged.

STEEL's iron and steel price composite is down 4 cents to $32.41, due to the reduction in scrap; the finished steel index holds at $54, and the scrap composite is off 12 cents to $10.46.

COMPOSITE MARKET AVERAGES

	June 15	June 8	June 1	One Month Ago May, 1935	Three Months Ago March, 1935	One Year Ago June, 1934	Five Years Ago June, 1930
Iron and Steel	$32.41	$32.45	$32.43	$32.35	$32.26	$32.96	$33.28
Finished Steel	54.00	54.00	54.00	54.00	54.00	55.08	52.37
Steelworks Scrap	10.46	10.58	10.50	10.27	10.75	10.32	13.11

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	June 15, 1935	May, 1935	Mar., 1935	June, 1934
Steel bars, Pittsburgh	1.80c	1.80c	1.80c	1.90c
Steel bars, Chicago	1.85	1.85	1.85	1.95
Steel bars, Philadelphia	2.11	2.11	2.09	2.19
Iron bars, Terre Haute, Ind.	1.75	1.75	1.75	1.85
Shapes, Pittsburgh	1.80	1.80	1.80	1.85
Shapes, Philadelphia	2.01½	2.01½	2.00½	2.05½
Shapes, Chicago	1.85	1.85	1.85	1.90
Tank plates, Pittsburgh	1.80	1.80	1.80	1.85
Tank plates, Philadelphia	2.00	1.99	1.98½	2.03½
Tank plates, Chicago	1.85	1.85	1.85	1.90
Sheets, No. 10, hot rolled, Pitts.	1.85	1.85	1.85	2.00
Sheets, No. 24, hot ann., Pitts.	2.40	2.40	2.40	2.65
Sheets, No. 24, galvan., Pitts.	3.10	3.10	3.10	3.25
Sheets, No. 10, hot rolled, Gary	1.95	1.95	1.95	2.10
Sheets, No. 24, hot anneal., Gary	2.55	2.55	2.55	2.75
Sheets, No. 24, galvan., Gary	3.20	3.20	3.20	3.35
Plain wire, Pittsburgh	2.30	2.30	2.30	2.30
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.25
Wire nails, Pittsburgh	2.60	2.60	2.60	2.60

Semifinished Material

Sheet bars, open-hearth, Youngs.	$28.00	$28.00	$28.00	$30.00
Sheet bars, open-hearth, Pitts.	28.00	28.00	28.00	30.00
Billets, open-hearth, Pittsburgh	27.00	27.00	27.00	29.00
Wire rods, Pittsburgh	38.00	38.00	38.00	38.00

Pig Iron

	June 15, 1935	May, 1935	Mar., 1935	June, 1934
Bessemer, del. Pittsburgh	$19.81	$19.80	$19.76	$19.76
Basic, Valley	18.00	18.00	18.00	18.00
Basic, eastern, del. eastern Pa.	19.76	19.81	19.76	19.76
No. 2, foundry, del. Pittsburgh	19.31	19.30	19.26	19.26
No. 2, foundry, Chicago	18.50	18.50	18.50	18.50
Southern No. 2, Birmingham	14.50	14.50	14.50	14.50
No. 2X eastern, del. Philadelphia	20.68	20.68	20.63	20.63
Malleable, Valley	18.50	18.50	18.50	18.50
Malleable, Chicago	18.50	18.50	18.50	18.50
Lake Superior charcoal, del. Chi.	24.25	24.25	24.04	24.04
Ferromanganese, del. Pittsburgh	90.13	90.13	89.79	90.00
Gray forge, del. Pittsburgh	18.67	18.66	18.63	18.88

Scrap

Heavy melting steel, Pittsburgh	$12.00	$12.00	$12.40	$11.90
Heavy melt. steel, No. 2, east. Pa.	9.25	9.25	9.15	8.95
Heavy melting steel, Chicago	10.25	10.20	10.45	9.75
Rails for rolling, Chicago	11.25	11.05	11.55	11.25
Railroad steel specialties, Chicago	11.75	11.40	11.55	11.25

Coke

Connellsville, furnace, ovens	$3.40	$3.60	$3.60	$3.60
Connellsville, foundry ovens	4.60	4.60	4.60	4.60
Chicago, by-product foundry, del.	9.25	9.25	9.25	9.25

Steel, Iron, Raw Material, Fuel and Metals Prices

Except when otherwise designated, prices are base, f.o.b. cars. Asterisk denotes price change this week.

Sheet Steel

Hot Rolled No. 10, 24-48 in.

Pittsburgh	1.85c
Gary	1.95c
Chicago, delivered	1.98c
New York, del.	2.20c
Philadelphia, del.	2.16c
Birmingham	2.00c
St. Louis, del.	2.17c
Pacific ports, f.o.b. cars, dock	2.40c

Hot Rolled Annealed No. 24

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53c
Detroit, delivered	2.60c
New York, del.	2.75c
Philadelphia, del.	2.71c
Birmingham	2.55c
St. Louis, del.	2.72c
Pacific ports, f.o.b. cars, dock	3.05c

Galvanized No. 24

Pittsburgh	3.10c
Gary	3.20c
Chicago, delivered	3.23c
Philadelphia, del	3.41c
New York, del.	3.45c
Birmingham	3.25c
St. Louis, del.	3.42c
Pacific ports, f.o.b. cars, dock	3.70c

Tin Mill Black No. 28

Pittsburgh	2.75c
Gary	2.85c
St. Louis, delivered	3.07c

Cold Rolled No. 10

Pittsburgh	2.50c
Gary	2.60c
Detroit, delivered	2.70c
Philadelphia, del.	2.81c
New York, del.	2.85c
Pacific ports, f.o.b. cars, dock	3.10c

Cold Rolled No. 20

Pittsburgh	2.95c
Gary	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.26c
New York, del.	3.30c

Enameling Sheets

Pittsburgh, No. 10	2.50c
Pittsburgh, No. 20	3.10c

Tin and Terne Plate

Gary base, 10 cents higher.

Tin plate, coke base con. (box) Pitts.	$5.25
Do., waste-waste	2.75c
Do., strips	2.50c
Long ternes, No. 24 unassorted, Pitts.	3.40c
Do., Gary	3.50c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No 304
Bars	23.00	24.00
Plates	26.00	28.00
Sheets	33.00	35.00
Hot strip	20.75	22.75
Cold strip	27.00	29.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	17.00	18.50	21.00	26.00
Plates	20.00	21.50	24.00	29.00
Sheets	25.00	28.00	31.00	35.00
Hot strip	15.75	16.75	21.75	26.75
Cold stp.	20.50	22.00	27.00	35.00

Steel Plates

Pittsburgh	1.80c
New York, del.	2.09c
Philadelphia, del.	1.99c
Boston, delivered	2.22c
Buffalo, delivered	2.05c
Chicago or Gary	1.85c
Cleveland, del.	1.99½c
Birmingham	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific ports, f.o.b. cars, dock	2.35c
St. Louis, delivered	2.07c

Structural Shapes

Pittsburgh	1.80c
Philadelphia, del.	2.01½c
New York, del.	2.06½c
Boston, delivered	2.20½c
Bethlehem	1.90c
Chicago	1.85c
Cleveland, del.	2.00c
Buffalo	1.90c
Gulf Ports	2.20c
Birmingham	1.95c
Pacific ports, f.o.b. cars, dock	2.35c

Bars

Soft Steel

Pittsburgh	1.80c
Chicago or Gary	1.85c
Duluth	1.95c
Birmingham	1.95c
Cleveland	1.85c
Buffalo	1.90c
Detroit, delivered	1.95c
Pacific ports, f.o.b. cars, dock	2.35c
Philadelphia, del.	2.11c
Boston, delivered	2.22c
New York, del.	2.15c
Pitts., forg. qual.	1.95c-2.05c

Rail Steel

To Manufacturing Trade

Pittsburgh	1.70c
Chicago or Gary	1.75c
Moline, Ill.	1.75c
Cleveland	1.75c
Buffalo	1.80c

Iron

Troy, N. Y.	1.70c
Terre Haute, Ind.	1.75c
Chicago	1.80c
Philadelphia	1.91c
Pittsburgh, refined	2.75-7.50c

Reinforcing

New billet, straight lengths, quoted by distributors.

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young.	2.10c
Gulf ports	2.45c
Pacific coast ports f.o.b. cars dock	2.45c
Philadelphia, del.	2.36c

Rail Steel

Straight lengths quoted by distributors

Pittsburgh	1.90c
Chicago, Buffalo, Cleveland, Birm., Young.	1.95c
Gulf ports	2.30c

Wire Products

(Prices apply to straight or mixed carloads; pool cars, or less, 15c up. 10% dis. on nail extras on stright or mixed carloads to one consignee.)

Base Pitts.-Cleve. 100 lb. keg.

Standard wire nails	$2.60
Cement coated nails	2.60
Galvanized nails, 15 gage and coarser	4.60c
do., 16 gage and finer	5.10c

(Per pound)

Polished staples	3.30c
Galvanized fence staples	3.55c
Barbed wire, galv.	3.00c
Annealed fence wire	2.45c
Galvanized fence wire	2.80c
Woven wire fencing (base column, c.l.)	$63.00
Plain wire, 6-9 gage to mfg. trade	2.30c

Anderson, Ind., (merchant products only) and Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire, Pittsburgh or Cleveland	2.90c

Do., Chicago up $1, Worcester, $2.

Cold-Finished Carbon Bars and Shafting

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs	1.95c
20,000 to 59,999 lbs.	1.90c
60,000 to 99,999 lbs.	1.85c
100,000 lbs. and over	1.82½c

Gary, Ind., Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars (Hot)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.45c

Alloy	S.A.E.	Diff.	S.A.E.	Alloy Diff.
	2000	0.25	3100	0.55
	2100	0.55	3200	1.35
	2300	1.50	3300	3.80
	2500	2.25	3400	3.20
4100	0.15 to 0.25 Mo			0.50
4600	0.20 to 0.30 Mo. 1.25-1.75 Ni.			1.05
5100	0.80-1.10 Cr			0.45
5100	Cr. spring			base
6100	bars			1.20
6100	spring			0.70
Cr., Ni., Van.				1.50
Carbon Van.				0.95
9250	Carbon base plus extras			

Piling

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Strip and Hoops

Hot strip to 23½-in. Pittsburgh	1.85c
Chicago, base	1.95c
Birmingham base	2.00c
Detroit, delivered	2.05c
Philadelphia, del.	2.16c
New York, del.	2.20c
Cooperage hoop, Pittsburgh	1.95c
Chicago	2.05c
Cold-rolled strip, Pitts., Cleve.	2.60c
Worcester, Mass.	2.80c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 24-45 lbs.	$26.00
50-60 lbs.	$23.00
70-75 lbs.	$20.00
80-85 lbs.	$24.00
100 lbs.	$25.00
Light rails, billet qual. Pitts., Chi.	$35.00
Do., reroll. qual.	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel	2.10c
Spikes, R. R. base	2.40c
Track bolts, base	3.55c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs. up $8; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots, Dec. 1, 1932, lists, 10% extra for less full containers.

Carriage Bolts

All sizes, cut thread	70-10-5 off
Rolled thread, ½ x 6, smaller	70-10-5 off

Machine Bolts

All sizes cut thread lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts stud bolts	70-10-5 off
Tire bolts	60-5 off
Stove bolts, 75 off in pkgs.; 83 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.	
Rolled thread machine, ½ x 6, smaller	70-10-5 off
Step bolts	70-5 off
Elevator bolts	70-5 off

Nuts

S.A.E. semifinished hex.; ½ to ⅞-inch	70-10-5 off
Do., ½ to 1-inch	70-10-5 off
Do., over 1-inch	70 off

Hexagon Cap Screws

Milled	85-10 off
Upset, 1-in., smaller	87½ off

Square Head Set Screws

Upset, 1-in., smaller	80 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	2.90c
Struc., c. l., Chicago	3.00c
⅞-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila., to jobbers & large nut, bolt mfrs.	$6.25 off

Cut Nails

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more no discount on size extras	$3.05
Do. under 5 kegs; no discount on size extras	$3.20

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads, Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

Butt Weld

Steel

In.	Blk.	Gal.
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

Lap Weld

Steel

2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½

Line Pipe

Steel

½, butt weld	57½
⅛-inch, butt weld	50½
¼—⅜, butt weld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63

Iron

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe lists, 8—12-inch, no extra.

Boiler Tubes

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¼—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 200 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 lbs., 2 points under base.

Seamless Boiler Tubes

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots of 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$39.00-40.00
4-in., Birmingham	42.00-43.00
4-in., Chicago	50.40-51.40
6 to 24-in. Chicago	47.40-48.40
6-in. & over, east fdy.	43.00
Do., 4-in.	46.00

Class A pipe $3 over Class B.

Stnd. fitgs., Birm. base	$100.00

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown	$27.00
Philadelphia	32.67
Duluth	31.00
Forging, Pitts., Chi. and Buffalo	32.00
Forging, Duluth	36.00

Sheet Bars

Pitts., Cleve., Young., Chi., Buff., Canton, Sparrows Pt.	28.00

Slabs

Pitts., Cleve., Young.	27.00

Wire Rods

(Common; combination up $2)

Pitts., Cleveland	38.00
Chicago	39.00
Worcester, Mass.	40.00

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Point	1.70c

Coke

Price Per Net Ton

Beehive Ovens

*Connellsville, fur.	$3.40- 3.60
Connellsville, fdry.	4.60
*Connel. prem. fdry.	5.10- 5.35
New River fdry.	6.00
Wise county fdry.	4.45- 5.25
Wise county fur.	4.00- 4.50

By-Product Foundry

Newark, N. J., del.	9.20- 9.65
Chi., ov., outside del.	8.50
Chicago, del.	9.25
New England, del.	11.00
St. Louis, del.	9.25
Birmingham, ovens	6.00
Indianapolis, del.	8.75
Cincinnati, del.	9.30
Cleveland, del.	9.25
Buffalo, ovens	7.50- 8.00
Detroit ov., out. del.	8.50
Philadelphia, del.	9.03

Coke By-Products

Per gallon, producers' plants.

	Tank lots	Spot
Pure and 90% benzol		15.00c
Toluol		30.00c
Solvent naphtha		30.00c
Commercial xylol		30.00c

Per lb. f.o.b. New York.

Phenol (200 lb. drums)	16.30c
Do. (100 lbs.)	17.30c

Eastern Plants, per lb.

Naphthalene flakes and balls, in bbls., to jobbers	4.50c

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.20

†Western prices, ½-cent up.

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25; 50c diff. for each 0.25 below 1.75. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$19.50	$20.00	$19.00	$20.50
Birdsboro, Pa.	19.50	20.00	19.00	20.50
Birmingham, Ala., southern del.	14.50	14.50	13.50	19.00
Buffalo	18.50	19.00	17.50	19.50
Chicago	18.50	18.50	18.00	19.00
Cleveland	18.50	18.50	18.00	19.00
Detroit	18.50	18.50	18.00	19.00
Duluth	19.00	19.00	.....	19.50
Erie, Pa.	18.50	19.00	18.00	19.50
Everett, Mass.	19.50	20.00	19.00	20.50
Hamilton, O.	18.50	18.50	18.00	19.00
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	18.50	18.50	18.00	19.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	18.50	18.50	18.00	19.00
Sparrows Point, Md.	19.50	.....	19.00	.....
Swedeland, Pa.	19.50	20.00	19.00	20.50
Toledo, O.	18.50	18.50	18.00	19.00
Youngstown, O.	18.50	18.50	18.00	19.00
Delivered from Basing Points:				
Akron, O., from Cleveland	19.76	19.76	19.26	20.26
Baltimore from Birmingham	20.08	.....	18.96	.....
Boston from Birmingham	19.62	.....	19.50	.....
Boston from Everett, Mass.	20.00	20.50	19.50	21.00
Boston from Buffalo	20.00	20.50	19.50	21.00
Brooklyn, N. Y., from Bethlehem	21.93	22.43	.....	.....
Brooklyn, N. Y., from Bmghm.	21.55	.....	.....	.....
Canton, O., from Cleveland	19.76	19.76	19.26	20.26
Chicago from Birmingham	†18.72	.....	18.60	.....
Cincinnati from Hamilton, O.	19.51	19.51	19.01	.....
Cincinnati from Birmingham	19.38	.....	19.40	.....
Cleveland from Birmingham	19.04	.....	18.92	.....
Indianapolis from Hamilton, O.	20.93	20.93	20.43	21.43
Mansfield, O., from Toledo, O.	20.26	20.26	19.76	20.76
Milwaukee from Chicago	19.57	19.57	19.07	20.07
Muskegon, Mich., from Chicago, Toledo or Detroit	21.60	21.60	21.10	22.10
Newark, N. J., from Birmingham	20.61	.....	.....	.....
Newark, N. J., from Bethlehem	20.99	21.49	.....	.....
Philadelphia from Birmingham	19.93	.....	19.1	.....
Philadelphia from Swedeland, Pa.	20.31	20.81	19.81	.....
Pittsburgh district from Neville Island	Neville base plus 67c, 81c and $1.21 switching charges			
Saginaw, Mich., from Detroit	20.75	20.75	20.25	20.25

Delivered from Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	19.00	19.00	18.50	.....
St. Louis from Birmingham	†18.62	.....	18.50	.....
St. Paul from Duluth	20.94	20.94	.....	21.44

†Over 0.70 phos.

Low Phos

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $23.50. Phila. base, standard and copper bearing, $24.63.

Gray Forge		Charcoal	
Valley furnace	18.00	Lake Superior fur.	21.00
Pitts. dist. fur.	18.00	Do., del. Chicago	24.25
		Lyle, Tenn.	21.50

Silvery†

Jackson County, O., base; 6% $22.75; 7—$23.75; 8—$24.75; 9—$25.70; 10—$26.75; 11—$27.75. Buffalo base prices, up $1.25.

Bessemer Ferrosilicon†

Jackson County, O., base; 10%—$27.75; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25. Buffalo base prices $1.25 higher.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Refractories

Per 1000 f.o.b. Works

Fire Clay Brick

First Quality.

Pa., Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	45.00

Second Quality

Pa., Ill., Ky., Md., Mo., Ga., Ala.	40.00

Ohio

First quality	$40.00-45.00
Intermediary	37.00
Second quality	28.00

Malleable Bung Brick

All bases	50.00

Silica Brick

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
Birmingham, Ala.	52.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	40.00
Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk)	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$45.00
Chemically bonded chrome brick	42.50
Magnesite brick	65.00
Chemically bonded magnesite brick	55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$18.75-19.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$13.00-14.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	85.00
Do., Balti. base	85.00
Do., del. Pittsburgh	90.13
Spiegeleisen, 19-20% dom. Palmerton, Pa., spot†	26.00
Do., New Orleans	26.00
Ferrosilicon, 50% freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent	126-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	90.00
2% carbon, 95.00; 1%,	105.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Ferrotungsten, stand., lb. cont. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont., on analysis	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt. allow., lb.	7.00
do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17,-19% Rockdale, Tenn., basis, 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	65.00
Ferromolybdenum, stand. 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous Prices

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Chinese Spot, N. Y.	Nickel Cathodes
June 8	9.00	9.12½	8.00	50.45	49.65	4.00	3.85	4.30	*19.00	12.75	35.00
June 10	9.00	9.12½	8.00	50.45	49.65	4.00	3.85	4.30	*19.00	12.75	35.00
June 11	9.00	9.12½	8.00	50.55	49.80	4.00	3.85	4.30	*19.00	12.75	35.00
June 12	9.00	9.12½	8.00	50.75	50.12½	4.00	3.85	4.30	*19.00	12.75	35.00
June 13	9.00	9.12½	8.00	51.25	50.50	4.00	3.85	4.30	*19.00	12.75	35.00
June 14	9.00	9.12½	8.00	51.25	50.37½	4.00	3.85	4.30	*19.00	12.75	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.00c Conn. copper.

Sheets	
Yellow brass (high)	14.25
Copper, hot rolled	16.00
Lead, cut to jobbers	7.75
Zinc, 100-lb. base	9.50
Tubes and Pipes	
High yellow brass	16.00
Seamless copper	16.25
Rods	
High yellow brass	12.75
Copper, hot rolled	13.25
Anodes	
Copper, untrimmed	13.75
Wire	
Yellow brass (high)	14.75

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.37½-4.62½
Cleveland	4.50- 5.00
Chicago	4.25- 4.50
St. Louis	5.00- 5.25
Heavy Copper and Wire	
New York, No. 1	5.75- 6.00
Chicago, No. 1	5.75- 6.00
*Cleveland	5.25- 5.50
St. Louis, No. 1	6.00- 6.25
Composition Brass Borings	
New York	4.00- 4.25
Light Copper	
New York	4.50- 4.75
Chicago	4.25- 4.50
*Cleveland	4.25- 4.50
St. Louis	5.00- 5.25
Light Brass	
Chicago	2.25- 2.50
Cleveland	2.50- 2.75
St. Louis	2.50- 2.75
Lead	
New York	3.00- 3.12½
*Cleveland	2.75- 3.00
Chicago	2.75- 3.00
*St. Louis	3.00- 3.25
Zinc	
New York	2.00- 2.25
*Cleveland	2.00- 2.10
*St. Louis	2.50- 2.65
Aluminum	
Borings, Cleveland	7.50- 8.00
Mixed, cast, Cleve.	12.00-12.50
*Mixed cast, St. L.	12.50-12.75
Clips, soft, Cleve.	13.50-14.00
SECONDARY METALS	
Brass ingott, 85-5-5-5	8.00
*Stand. No. 12 Alum.	16.00-17.00

Iron and Steel Scrap Prices

Corrected to Friday night Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	8.50- 9.00
Boston, dock, expt.	8.50
Boston, domestic	7.00- 7.25
Buffalo, No. 1	11.00-11.50
Buffalo, No. 2	9.50-10.00
Chicago, No. 1	9.75-10.25
Cleveland, No. 1	9.00- 9.50
Cleveland, No. 2	8.50- 9.00
Detroit, No. 1	8.00- 8.50
Detroit, No. 2	7.00- 7.50
Eastern Pa., No. 1	10.50
Eastern Pa., No. 2	9.00- 9.50
Federal, Ill.	8.00- 8.50
Granite City, R. R.	8.50- 9.00
Granite City, No. 2	7.25- 7.75
N. Y., deal, No. 2	7.50
N. Y., deal. barge	8.50
Pittsburgh, No. 1	11.75-12.25
Pittsburgh, No. 2	10.25-10.75
St. Louis	7.50- 8.00
Valleys, No. 1	11.50-12.00

COMPRESSED SHEETS

Buffalo, dealers	9.50-10.00
Chicago, factory	8.50- 9.00
Chicago, dealer	7.50- 8.00
Cleveland	8.00- 8.50
Detroit	8.50- 9.00
E. Pa., new mat.	10.00
Pittsburgh	11.75-12.25
St. Louis	6.25- 6.75
Valleys	11.00-11.50

BUNDLED SHEETS

Buffalo	7.00- 7.50
Cincinnati, del.	6.00- 6.50
Cleveland	6.00- 6.50
Pittsburgh	10.25-10.75
St. Louis	4.50- 5.00

SHEET CLIPPINGS, LOOSE

Chicago	6.00- 6.50
Cincinnati	5.50- 6.00
Detroit	5.00- 5.50
St. Louis	4.25- 4.75

STEEL RAILS, SHORT

Birmingham	12.00-12.50
Buffalo	13.00-13.50
Chicago (3 ft.)	12.50-13.00
Chicago (2 ft.)	13.00-13.50
Cincinnati, del.	11.00-11.50
Detroit	10.50-11.00
Pitts., open-hearth, 3 ft. and less	14.00-14.50
St. Louis, 2 ft.& less	12.00-12.50

STEEL RAILS, SCRAP

Boston	7.00- 7.25
Chicago	10.50-11.00
Pittsburgh	13.00-13.50
St. Louis	9.75-10.25

STOVE PLATE

Birmingham	5.75- 6.00
Boston, dealers	3.50- 3.75
Buffalo	9.25- 9.75
Chicago, net	6.00- 6.50
Cincinnati, dealers	5.50- 6.00
Detroit, net	5.75- 6.25
Eastern Pa.	8.50
N. Y., deal. fdry	6.00
St. Louis	5.50- 6.00

COUPLERS, SPRINGS

Buffalo	12.75-13.25
Chicago, springs	11.50-12.00
Eastern Pa.	13.50
Pittsburgh	14.50-15.00
St. Louis	8.50- 9.00

ANGLE BARS—STEEL

Chicago	13.00-13.50
St. Louis	9.50-10.00

RAILROAD SPECIALTIES

Chicago	11.50-12.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	12.75-13.25
Cleveland, billet, bloom crops	14.00-14.50
Eastern Pa., crops	13.00-14.00
Pittsburgh, billet, bloom crops	15.00-15.50
Pittsburgh, sheet bar crops	13.50-14.00

FROGS, SWITCHES

Chicago	10.00-10.50
St. Louis, cut	9.75-10.25

SHOVELING STEEL

Chicago	9.75-10.25
Federal, Ill.	7.50- 8.00
Granite City, Ill.	7.50- 8.00

RAILROAD WROUGHT

Birmingham	8.00- 8.50
Boston, dealers	6.00- 6.50
Buffalo, No. 1	9.50-10.00
Buffalo, No. 2	11.00-11.50
Chicago, No. 1, net	8.50- 9.00
Chicago, No. 2	9.75-10.25
Cincinnati, No. 2	7.50- 8.00
Eastern Pa.	10.50-11.00
N. Y., No. 1, deal.	7.25- 7.75
St. Louis, No. 1	6.50- 7.00
St. Louis, No. 2	8.25- 8.75

SPECIFICATION PIPE

Boston	3.00- 3.25
Eastern Pa.	9.00- 9.50
New York, dealers	3.50- 4.00

BUSHELING

Buffalo, No. 1	9.50-10.00
Chicago, No. 1	8.50- 9.00
Cinci., No. 1, deal.	6.00- 6.50
Cincinnati, No. 2	3.00- 3.50
Cleveland, No. 2	6.00- 6.50
Detroit, No. 1, new	7.00- 7.50
Valleys, new, No. 1	10.50-11.00

MACHINE TURNINGS

Birmingham	3.50- 4.00
Boston, dealers	2.00- 2.25
Buffalo	4.50- 5.00
Chicago	5.00- 5.50
Cincinnati, dealers	3.50- 4.00
Cleveland	5.00- 5.50
Detroit	4.50- 5.00
Eastern Pa.	6.00- 6.50
New York, dealers	2.50- 2.75
Pittsburgh	7.75- 8.25
St. Louis	2.25- 2.75
Valleys	8.25- 8.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	3.25- 3.50
Buffalo	6.00- 6.50
Cincinnati, dealers	3.50- 4.00
Cleveland	6.00- 6.50
Detroit	4.75- 5.25
Eastern Pa.	5.00
New York, dealers	1.50- 1.75
Pittsburgh	6.50- 7.00

CAST IRON BORINGS

Birmingham, plain	3.50- 4.00
Boston, chemical	5.50- 6.50
Boston, dealers	3.25- 3.50
Buffalo	6.00- 6.50
Chicago	5.00- 5.50
Cincinnati, dealers	3.50- 4.00
Cleveland	6.50- 7.00
Detroit	4.75- 5.25
E. Pa., chemical	11.00-12.00
New York, dealers	1.50- 1.75
St. Louis	2.00- 2.50

PIPE AND FLUES

Cincinnati, dealers	5.00- 5.50

RAILROAD GRATE BARS

Buffalo	7.50- 8.00
Chicago, net	6.00- 6.50
Cincinnati	4.00- 4.50
Eastern Pa.	8.50
New York, dealers	4.00- 4.50
St. Louis	4.50- 5.00

FORGE FLASHINGS

Boston, dealers	4.50
Buffalo	9.50-10.00
Cleveland	8.00- 8.50
Detroit	7.00- 7.50
Pittsburgh	10.00-10.50

FORGE SCRAP

Boston, dealers	4.50
Chicago, heavy	10.50-11.00
Eastern Pa.	9.50-10.00

ARCH BARS, TRANSOMS

St. Louis	10.00-10.50

AXLE TURNINGS

Boston, dealers	3.00- 3.50
Buffalo	7.50- 8.00
Chicago, elec. fur.	9.50-10.00
Cleveland	7.00- 7.50
Eastern Pa.	9.50
St. Louis	7.00- 7.50

STEEL CAR AXLES

Birmingham	12.00-12.50
Boston, ship. point.	10.00-10.50
Buffalo	12.50-13.00
Chicago, net	13.50-14.00
Eastern Pa.	16.00
St. Louis	12.00-12.50

SHAFTING

Boston, ship. point.	12.00-12.25
Eastern Pa.	17.00
New York, dealers	13.00-13.25
St. Louis	11.00-11.50

CAR WHEELS

Birmingham	9.00-10.00
Boston, iron deal.	5.25- 5.50
Buffalo, iron	11.00-11.50
Buffalo, steel	12.75-13.25
Chicago, iron	10.50-11.00
Chicago, rolled steel	11.00-11.50
Cincinnati, iron	8.00- 8.50
Eastern Pa., iron	11.00
Eastern Pa., steel	13.50
Pittsburgh, iron	12.00-12.50
Pittsburgh, steel	14.50-15.00
St. Louis, iron	8.00- 8.50
St. Louis, steel	10.75-11.25

NO. 1 CAST SCRAP

Birmingham	8.50- 9.50
Boston, No. 1 mach.	8.50- 9.00
Boston, No. 2	7.50- 8.00
Boston, tex. con.	8.50- 9.00
Buffalo, cupola	10.75-11.25
Buffalo, mach.	11.50-12.00
Chicago, agri. net	7.50- 8.00
Chicago, auto	9.00- 9.50
Chicago, mach. net	9.50-10.00
Chicago, railr'd net	8.00- 8.50
Cinci., mach. cup	8.50- 9.00
Cleveland, cupola	11.50-12.00
Detroit, net	9.50-10.00
Eastern Pa., cupola	11.00-12.00
E. Pa., mixed yard	8.50- 9.50
Pittsburgh, cupola	12.50-13.00
San Francisco, del.	13.50-14.00
Seattle	7.00- 8.50
St. Louis, No. 1	8.00- 8.50
St. L., No. 1 mach.	9.00- 9.50

HEAVY CAST

Boston, del.	5.25- 5.50
Buffalo, break.	8.50- 9.00
Cleveland, break.	7.50- 8.00
Detroit, No. 1, mach. net	10.00-10.50
Detroit, break.	7.00- 7.50
Detroit, auto net	10.50-11.00
Eastern Pa.	10.50-11.00
N. Y., break. deal.	6.25- 6.75
Pittsburgh	11.50-12.00

MALLEABLE

Birmingham, R. R.	10.50-11.00
Boston, consum.	12.00-12.50
Buffalo	13.00-13.50
Chicago, R. R.	13.00-13.50
Cincinnati, agri. del.	8.50- 9.00
Cleveland, rail	12.00-12.50
Detroit, auto	10.00-10.50
St. Louis, R. R.	10.75-11.25
Eastern Pa., R. R.	11.00-11.50

RAILS FOR ROLLING

5 feet and over

Birmingham	10.50-11.00
Boston, dealers	8.00- 8.50
Buffalo	11.00-11.50
Chicago	11.00-11.50
Eastern Pa.	12.50-13.00
New York, dealer	7.50- 8.00
St. Louis	10.00-10.50

LOCOMOTIVE TIRES

Chicago (cut)	12.00-12.50
St. Louis, No. 1	9.00- 9.50

LOW PHOS. PUNCHINGS

Buffalo	12.50-13.00
Chicago	12.50-13.00
Eastern Pa.	13.00-14.00
Pittsburgh (heavy)	13.50-14.00
Pittsburgh (light)	13.00-13.50

Iron Ore

Lake Superior Ore

Gross ton, 51½%

Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

Eastern Local Ores

Cents, unit, del. E. Pa.

Foundry and basic 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

Foreign Ore

Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.00
No. Afr. low phos.	10.00
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish No. Africa basic, 50 to 60%	9.00
*Tungsten, spot, sh. ton unit, duty pd.	$15.50-16.00
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$18.00-19.50

Manganese Ore

(Nominal)

Prices not including duty, cents per unit cargo lots.

Caucasian, 52-55%	26.00
So. African, 52%	26.00
So. Afr., 49-51%	24.00
Indian, 58-60%	nominal
Indian, 48-50%	nominal

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*	2.95c
Boston††	3.00c
Buffalo	3.00c
Chattanooga	3.31c
Chicago	2.95c
Cincinnati	3.17c
Cleveland	2.95c
Detroit	3.04c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.06c
New Orleans	3.30c
New York‡(d)	3.26c
Pittsburgh (h)	2.90c
Philadelphia*	2.93c
San Francisco	3.60c
Seattle	3.60c
St. Louis	3.19c
St. Paul	3.00c
Tulsa	3.25c
IRON BARS	
Portland	3.40c
Chattanooga	3.31c
Baltimore*	3.05c
Chicago	2.75c
Cincinnati	3.17c
New York‡(d)	3.36c
Philadelphia*	2.93c
St. Louis	3.19c
Tulsa	3.25c
REINFORCING BARS	
Buffalo	2.60c
Chattanooga	3.31c
Chicago	2.10c-2.60c
Cleveland (c)	2.10c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl.	2.45c
New Orleans	3.50c
Pitts., plain (h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	2.45c
St. Louis	3.24c
Tulsa	3.25c
Young	2.30c-2.60c
SHAPES	
Baltimore*	3.00c
Boston††	3.19c
Buffalo	3.25c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland	3.31c
Detroit	3.42c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York(d)	3.37c
Philadelphia*	2.98c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c
PLATES	
Baltimore*	3.00c
Boston††	3.21c
Buffalo	3.37c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland, ¼-in. and over	3.31c
Detroit	3.42c
Detroit, ⅜-in.	3.65 c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York(d)	3.40c
Philadelphia*	2.98c
Phila. floor	4.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c
NO. 10 BLUE	
Baltimore*	3.10c
Boston††	3.30c
Buffalo	3.62c
Chattanooga	3.36c
Chicago	3.05c
Cincinnati	3.22c
Cleveland	3.11c
Det., 8-10 ga.	3.14c
Houston	3.35c
Los Angeles	3.70c
Milwaukee	3.16c
New Orleans	3.55c
New York	3.31c
Portland	3.75c
Philadelphia*	3.08c
Pittsburgh(h)	2.95c
San Francisco	3.75c
Seattle	3.75c
St. Louis	3.29c
St. Paul	3.45c
Tulsa	3.70c
NO. 24 BLACK	
Baltimore*†	3.60c
Boston (g)	3.95c
Buffalo	3.25c
Chattanooga	4.21c
Chicago	3.85c
Cincinnati	4.07c
Cleveland	3.91c
Detroit	3.94c
Los Angeles	4.35c
Milwaukee	3.96c
New York	3.89c
Philadelphia*†	3.60c
Pitts.** (h)	3.55c
Portland	4.40c
San Francisco	4.40c
Seattle	4.40c
St. Louis	4.09c
St. Paul	3.695c
Tulsa	4.75c
NO. 24 GALV. SHEETS	
Baltimore*†	4.30c
Buffalo	4.00c
Boston (g)	4.65c
Chattanooga	4.86c
Chicago (h)	4.55c
Cincinnati	4.72c
Cleveland	4.61c
Detroit	4.72c
Houston	4.40c
Los Angeles	4.95c
Milwaukee	4.66c
New Orleans	4.50c
New York	4.50c
Philadelphia*†	4.30c
Pitts** (h)	4.15-4.45c
Portland	5.00c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.79c
St. Paul	4.19c
Tulsa	5.10c
BANDS	
Baltimore*	3.20c
Boston††	3.30c
Buffalo	3.42c
Chattanooga	3.61c
Chicago	3.30c
Cincinnati	3.47c
Cleveland	3.36c
Detroit, ⅜-in. and lighter	3.39c
Houston	3.25c
Los Angeles	4.10c
Milwaukee	3.41c
New Orleans	3.95c
New York(d)	3.56c
Philadelphia	3.18c
Pittsburgh(h)	3.20c
Portland	4.25c
San Francisco	4.25c
Seattle	4.25c
St. Louis	3.54c
St. Paul	3.20c
Tulsa	3.45c
HOOPS	
Baltimore	2.30c
Boston	4.30c
Buffalo	3.42c
Chicago	3.30c
Cincinnati	3.47c
Det., No. 14 and lighter	3.39c
Los Angeles	5.85c
Milwaukee	3.41c
New York	3.56c
Philadelphia	3.43c
Pittsburgh(h)	3.70c
Portland	5.60c
San Francisco	6.15c
Seattle	5.60c
St. Louis	3.54c
St. Paul	3.75c
COLD FIN. STEEL	
Baltimore (c)	3.58c
Boston	3.75c-3.90c
Buffalo (h)	3.40c
Chattanooga*	3.98c
Chicago (h)	3.35c
Cincinnati	3.57c
Cleveland (h)	3.35c
Detroit	3.49c
Los. Ang.(f) (d)	5.70c
Milwaukee	3.46c
New Orleans	4.15c
New York	3.81c-4.31c
Philadelphia	3.61c
Pittsburgh	3.20c
Portland (f)	5.85c
San Fran.(f) (d)	5.80c
Seattle (f) (d)	5.85c
St. Louis	3.59c
St. Paul	3.05c
Tulsa	4.50c
COLD ROLLED STRIP	
Boston, 0.100-in., 500 lb. lots	5.35c
Buffalo	3.39c
Chicago	3.27c
Cincinnati (b)	3.44c
Cleveland (b)	3.20c
Detroit	3.33c
New York	3.36c
St. Louis	3.36c

TOOL STEELS

(Applying on or east of Mississippi river; west of Mississippi 1c up)

	Base
High speed	57c
High carbon, high chrome	37c
Oil hardening	22c
Special tool	20c
Extra tool	17c
Regular tool	14c

Uniform extras apply

BOLTS AND NUTS

(100 pounds or over)

	Discount
Chicago (a)	70
Cleveland	70
Detroit	70–5
Milwaukee	70
Pittsburgh	70

(a) Under 100 pounds, 65 off.

(b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Minus quant. diff.; (e) New mill classif.; (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less.

‡Domestic bars; *Plus quan. extras; **Under 25 bundles; *†50 or more bundles; †New extras apply; ††Base 40,000 lbs., extras on less.

Prices on heavier lines are subject to new quantity differentials; 399 lbs. and less, up 50 cts.; 400 to 9999 lbs., base; 10,000 to 19,999 lbs., 15 cts. under; 20,000 to 39,999 lbs., 25 cts. under; 40,000 lbs. and over, 35 cts. under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 13

Export Prices f. o. b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, metric tons Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
PIG IRON			
Foundry, 2.50-3.00 Silicon	$15.47 3 2 6	$13.70	1 14 0
Basic bessemer	15.47 3 2 6*	12.89	1 12 0
Hematite, Phos. .03-.05	15.59 3 3 0	.....	.....
SEMIFINISHED STEEL			
Billets	$27.23 5 10 0	$18.93	2 7 0
Wire rods, No. 5 gage	42.08 8 10 0	36.28	4 10 0
FINISHED STEEL			
Standard rails	$38.36 7 15 0	$44.34	5 10 0
Merchant bars	1.66c 7 10 0	1.14c to 1.19c	3 2 6 to 3 5 0
Structural shapes	1.63c 7 7 6	1.13c	3 1 6
Plates, ††¼ in. or 5 mm.	1.77c 8 0 0	1.51c	4 2 6
Sheets, black, 24 gage or 0.5 mm.	2.04c 9 5 0	2.12c	5 16 0††
Sheets, gal., 24 gage, corr.	2.49c 11 5 0	3.19c	8 15 0
Bands and strips	1.88c 8 10 0	1.46c	4 0 0
Plain wire, base	2.04c 9 5 0	1.95c	5 7 6
Galvanized wire, base	2.38c 10 15 0	2.28c to 2.32c	6 5 6 to 6 7 6
Wire nails, base	2.65c 12 0 0	2.10c	5 15 0
Tin plate, box 108 lbs.	$ 4.46 0 18 2	.....	.....

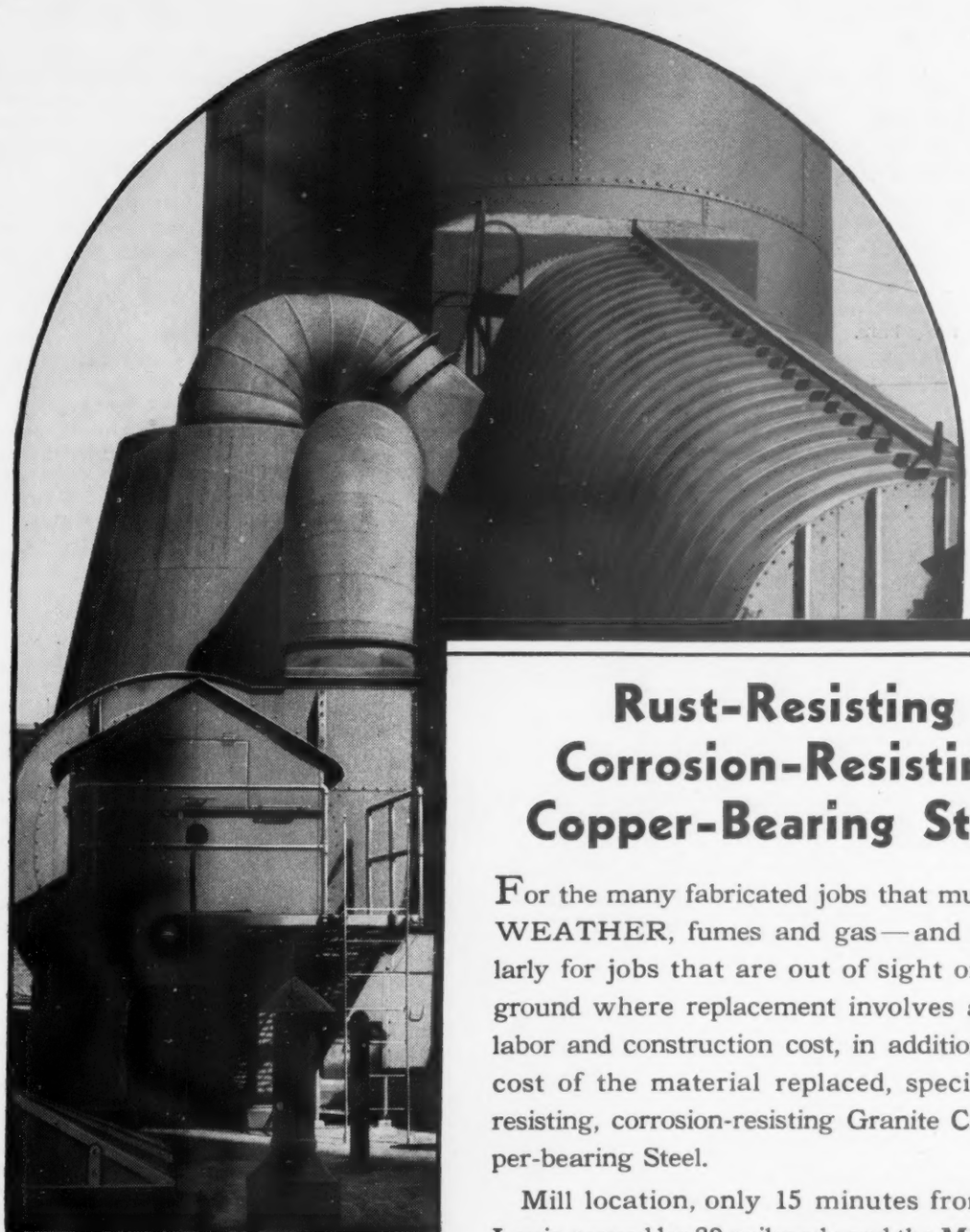
British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d $(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$16.71 3 7 6(a)	$17.13	260	$12.54	370	$25.36 63
Basic bessemer pig iron	16.71 3 7 6(a)*	12.19	185	11.18	330	27.97 (b) 69.50
Furnace coke	4.08 0 16 6	7.91	120	3.73	110	7.65 19
Billets	27.23 5 10 0	28.34	430	18.31	540	38.84 96.50
Standard rails	1.82c 8 5 0	2.08c	694	1.65c	1,100	2.42c 132
Merchant bars	1.90c 8 12 0	1.68c	560	.90c	600	2.01c 110
Structural shapes	1.93c 8 15 0	1.65c	550	.90c	600	1.97c 107.50
Plates, †¼-in. or 5 mm.	2.00c 9 1 3	2.10c	700	1.13c	750	2.32c 127
Sheets, black	2.32c 10 10 0§	2.10c	700‡	1.24c	825‡	2.64c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.87c 13 0 0	3.81c	1,270	2.25c	1,500	6.77c 370
Plain wire	2.04c 9 5 0	3.39c	1,130	1.65c	1,100	3.17c 173
Bands and strips	2.07c 9 7 0	1.95c	650	1.26c	840	2.32c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel a del. Middlesbrough. b hematite. ††Close annealed

**Gold pound sterling carries a premium of 65.50 per cent over paper sterling.



Rust-Resisting Corrosion-Resisting Copper-Bearing Steel

For the many fabricated jobs that must resist WEATHER, fumes and gas—and particularly for jobs that are out of sight or underground where replacement involves an extra labor and construction cost, in addition to the cost of the material replaced, specify rust-resisting, corrosion-resisting Granite City Copper-bearing Steel.

Mill location, only 15 minutes from Saint Louis, served by 29 railroads and the Mississippi River, assures better service to the Mississippi Valley, the West and the Southwest.

GALVANIZED SHEETS
STEEL SHEETS
PLATES AND
TIN PLATE

SINCE
GRANITE CITY STEEL
1878

GRANITE CITY STEEL CO

GRANITE CITY, ILLINOIS
5719 Ellsworth Ave., Dallas
916 Walnut Street, Kansas City
1805 Boatmen's Bank Bldg., St. Louis
1613 Pioneer Building, St. Paul.
1502 Mariner Tower, Milwaukee
110 South Dearborn Street, Chicago

Bars

Bar Prices, Page 62

Pittsburgh—Following a letup in bar specifications early last week, a reversal was evident by mid-week and specifications were improving. Most of the gains seemed to originate from miscellaneous sources. The market is firm at 1.80c, base, on carbon bars, and 2.45c, base, for alloy bars.

Cleveland—Steel bar demand is tapering, and production here is down to about 40 per cent, with the automobile industry taking small lots, but in the aggregate 85 per cent of the output. Miscellaneous requirements also are off. Some fairly good orders were placed during the week for forgings for ice-making equipment. Producers do not anticipate much improvement in July, as automobile manufacturers wind up work on present models, but believe August will be exceptionally good as requirements develop for new models. Steel bars are steady at 1.85c, base, Cleveland.

Chicago — Settlement of labor difficulties at the J. I. Case plant in Racine has resulted in slightly accelerated demand from the farm tool trade. Consumption in other directions is holding up well with the exception of the automotive trade. Prices are steady.

Boston—Demand for commercial steel, alloy and forging bars is light with consumers buying only for immediate needs. Prices, however, are firm with no concessions reported. Forging shops are less active.

New York—Specifications for steel bars are more active but there is little interest beyond immediate requirements. Prices are firm.

Philadelphia—Sun Shipbuilding Co., Chester, Pa., is inquiring for 125 tons of hot-rolled bars, band sizes. Demand generally is restricted to spot requirements, with prices steady.

Behind the Scenes with STEEL

Logical

Back in 1930 when the *Iron Trade Review* was changed to STEEL we had a long and serious discussion as to the best day for publication of a weekly business paper.

There are, of course, seven days in the week, on any of which STEEL could be published. There is just one logical day, however, and that is Monday. And Monday it is.

STEEL goes to press Friday night—news of Friday afternoon being covered fully. It is in the mails Saturday afternoon and, except in the far west, is received the first thing Monday morning. By thus taking advantage of the week-end for delivery, STEEL gives you the best service of all weekly business papers—so we're told.

The only thing wrong with all this is that the editors have to stay at work every Friday night until that last form is to bed. They like it, but their wives don't.

* * *

Wily Welder

Bob Kinkead's column on welding is stirring up a lot of comment from our army of indefatigable readers. He has a knack for turning out a readable brand of homely philosophy, well sprinkled with sage remarks about welding people and paraphernalia. Bob knows his stuff, too, being retained by several leading companies as welding consultant.

You'll find him this week on page 47.

* * *

Worries

There is a story about the city fellow who stopped to talk with the farmer who was butchering his pork. Hanging from the place farmers hang their pork was more meat than our city friend had even seen.

What surprised him even more, however, was the down-in-the-mouth look on the farmer. He asked if that wasn't enough meat to last him all next winter. The farmer replied it was but still looked very worried. He finally explained his situation like this:

"You see, right here is enough meat to see us through this comin' winter, and then I have enough pigs comin' on to take care of next winter. What's got me, though, is how in hell we're ever going to pull through the winter after that!"

Are too many of us thinking along those lines? Well, STEEL isn't, because right through the depression it has gone ahead and done things. It has realized the future would take care of itself if the present were taken care of first. That policy has made STEEL "the fastest growing industrial publication in the country."

* * *

Cutups

Have you a "shear fiend" in your office? He's one of those fellows who cuts out interesting pages of STEEL every week, until when the copy reaches your desk, there's not much left but the contents page.

With a dozen or so readers per copy, "shear fiends" can wreak havoc with their disembowelment tactics. Why not let us send STEEL to your personal attention? Or better still, let us send it to your home where you can sit down in an easy chair of an evening and spend a few enjoyable hours with the news of the metalworking industry at your fingertips? And may we add with pardonable audacity, for only 6 cents per week!

* * *

No Tanks. . .

One of our friends, who makes wooden tanks for pickling, has apparently tired of waiting to round the "corner."

With orders few and far between he has turned to the bootleggers and is doing a lively cash-and-carry business. Despite the FACA, G-men and other handicaps, the 'leggers still buy his tanks with cash on the line and, what with raids 'n' things, they don't last very long—necessitating more tanks and more cash.

Where there's a still there's a way!

* * *

The Mat Will Be Out

We are looking forward to the Machine Tool show to be held in Cleveland this September and to the chance of welcoming you if you make it.

The Cleveland auditorium and underground exhibition hall are wonderfully suited for such an exposition and its success is already assured. Applications for space indicate a record-breaking affair.

STEEL will be there. Drop in! We'd like to get to know you better.

—SHRDLU

Plates

Plate Prices, Page 62

Philadelphia—Plate tonnage continues to lag, although railroads are now entering the market for their quarterly requirements and some tank work is being figured. American Oil Co., Baltimore, is in the market for nineteen 20,000-gallon vertical tanks and six or seven floating top steel tanks. Of the latter, four will have a capacity of 20,000 barrels, one of 10,000 barrels and the one or two remaining 2500 barrels each. The tanks are for installation at Hays, Pa., near Pittsburgh. Approximately 250 tons of steel will be required for warehouse at that point also. Within 30 days the American Oil Co. will be in the market for six to eight steel barges of 8000 barrels capacity each. Also required for the Hays project is an unstated tonnage of bars for reinforcing walls around the tanks. American Oil Co. has opened bids on some tanks for Charleston, W. Va. Cambria & Indiana, recently noted as being in the market for repairs to 1000 coal cars, has decided to postpone this work indefinitely. Prices are unchanged.

Pittsburgh—An unstated tonnage of steel plates for tunnel liners for a four-mile sewer in Hazelwood, Pittsburgh, has been placed by Mike Manella, Pittsburgh, with Youngstown Steel Car Corp., Niles, O. Philadelphia engineers will close July 5 on three steel dump scows, each 115 x 28 x 9 feet, and the Mobile, Ala., engineers want bids by June 24 on two steel barges, each 100 x 24 x 7 feet. Treadwell Construction Co., Midland, Pa., is low at $104,000 for a steel dredge for the Vicksburg, Miss., army engineers on recent bids.

Cleveland — Manufacturers of

standardized equipment using plates appear more active in the market than those figuring on the larger types of construction. The former are supplying a fairly good run of carload orders. No requests have been received for price concessions, the majority of consumers apparently being just as anxious to maintain their prices as are the steel mills.

Chicago — Few plate jobs of consequence developed last week. Signs of increased construction and repair activity are beginning to appear in the oil industry. Two or three tank jobs will require moderate plate tonnage. Financing plans are expected to result in more business from railroad later.

Boston—Plate buying is in small lots. Lack of tonnage projects has resulted in no price test.

New York—Plate tonnage is still spotty, with little third quarter interest by consumers. The previously noted oil refinery contract booked by Alco Products Inc. for Russia will require approximately 5000 tons of steel, mostly plates. The full tonnage includes 200 or 300 tons of shapes and a substantial amount of tubing and castings. Plate prices are steady.

Standard Oil Co. of New Jersey apparently has made no decision on its inquiry for several hundred tanks of 500 gallons capacity each and the program may be dropped for the present.

San Francisco—Bids have been opened on 193 tons of cold-rolled sheet steel for the Mare Island, Calif., navy yard, schedule 5245, and on 150 tons for a refinery in Los Angeles for the Wilshire Oil Co. Bids are expected to be called soon for the Central valley water project in California, which will require close to 1000 tons for pipe lines.

Seattle — Service station construction has created an improved demand for light plates and shapes but heavier projects have been postponed, due to industrial labor troubles. Several proposed jobs of importance are in prospect but are not yet definitely out.

Contracts Placed

1000 tons, tunnel liners, Tygart river dam, Grafton, W. Va., to Treadwell Construction Co., Midland, Pa.

335 tons, 80,000-barrel tank, Hartford Electric Light Co., Hartford, Conn., to Chicago Bridge & Iron Works, Chicago.

250 tons, two spherical gas-holders, New York Power & Light Co., South Glens Falls and Hudson, N. Y., to Chicago Bridge & Iron Works, Chicago.

125 tons, elevated water tower, Princeton, Wis., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

100 tons, water stops, metropolitan water district, Los Angeles, to Consolidated Steel Corp., Los Angeles.

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MICHIGAN LEATHER PACKING CO.
720 Fourteenth Avenue, Detroit
Represented in Principal Cities

Write for Bulletin 301

Supertan
MECHANICAL LEATHER PACKINGS

Contracts Pending

400 tons, tanks, Bakersfield, Calif.

250 tons, Ballard trunk sewer siphon, Seattle, alternates for wood pipe; L. Coluccio & Co., Seattle, low.

200 tons, Gallup, N. Mex.

193 tons, cold-rolled sheet steel, schedule 5245, Mare Island, Calif.; bids opened.

150 tons, refinery, Wilshire Oil Co., Los Angeles; bids opened.

Unstated tonnage, 25 to 26 tanks for Hays, Pa., and for tank construction at Charleston, W. Va., bids being asked by American Oil Co., Baltimore; P. K. Construction Co., Pittsburgh, is understood to have been awarded general contract for work at Hays. The American Oil Co. will be in market soon for six to eight 8000-barrel steel barges.

Unstated tonnage, three steel dump scows, each 115 x 28 x 9 feet, for United States engineers, Philadelphia; bids July 5.

Unstated tonnage, two steel barges, 100 x 24 x 7 feet; bids to Mobile, Ala., army engineers, June 24.

Cold Finished

Cold Finished Prices, Page 63

Pittsburgh—Due largely to a sharp cutback in automotive buying, the cold-finished steel bar market is slack. The 1.95c, Pittsburgh base price, is firm. Alloy cold-drawn bars are quoted 2.95c, all basing points.

IRON ORE

All Lake Superior grades of iron ore

Five established brands of

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By-product and Steam

COAL

Pickands, Mather & Co.

Cleveland - Chicago - Detroit - Erie - Toledo
Minneapolis - Duluth

Transportation

Track Material Prices, Page 63

Orders for 80,000 tons of steel rails have been divided between the Dominion Steel & Coal Corp., Sydney, N. S., and Algoma Steel Corp., Sault Ste. Marie, Ont. The order is placed by the dominion government as a re-employment measure. Rails will be delivered to Canadian National Railways as needed and paid for on delivery, the government assuming interest and carrying charges. Wheeling & Lake Erie has placed 1100 tons of rails with Carnegie Steel Co., Pittsburgh.

United States engineer at Portland, Oreg., is considering bids on about 1000 tons of rails and fastenings for the Bonneville project, with Colorado Fuel & Iron Co. low. Pacific Railway Supply Co., Seattle, has been awarded 1000 tons of relaying rails for Seattle's Skagit light plant railroad.

Chesapeake & Ohio closes bids June 17 on its inquiry for 5125 freight cars and five locomotives. A number of eastern roads are in the market for third quarter steel requirements, Norfolk & Western opening bids June 20 on pipe and nails, June 21 on boiler tubes, June 26 on 4500 tons of plates, shapes and bars. Fruit Growers Express opens bids June 20 on miscellaneous steel requirements and Seaboard Air Line will take bids soon on 1000 kegs of spikes.

Cambria & Indiana has decided not to proceed with repairs to 1000 coal cars for which bids were taken recently. Chicago, Rock Island & Pacific is taking estimates on conversion of 320 wooden box cars to stock cars.

Board of transportation, New York, has completed investigation of financial status of bidders on 500 subway cars but has made no award. A New York transit company is inquiring for wheel requirements for last half.

Rail Orders Placed

80,000 tons, Canadian National, divided equally between Dominion Steel & Coal Corp., Sydney, N. S., and Algoma Steel Corp., Sault Ste. Marie, Ont.; Canadian government placed order as unemployment measure.

7000 tons, Canadian Pacific, to Dominion Steel & Coal Corp., Sydney, N. S.

1100 tons, Wheeling & Lake Erie, to Carnegie Steel Co., Pittsburgh.

1000 tons, relaying, for Seattle Skagit

power plant road, to Pacific Railway Supply Co., Seattle.

Car Orders Pending

Chicago Surface Lines, 100 street cars.

Rail Orders Pending

1000 tons, rails and accessories, for United States engineers, Portland, Oreg.; Colorado Fuel & Iron Co., Denver, low.

Sheets

Sheet Prices, Page 62

Pittsburgh — In the place of automotive sheet buying which has declined to a marked extent, orders for sheets traceable to a miscellaneous origin are now the backbone of the market. One producer, for example, in booking sheets daily at the rate of several thousand tons, shows that its individual orders are rarely more than a few hundred tons in size. Base prices are firm. There still is some unsettlement over drawing quality extras. The average of sheet mill operations is tending lower, with common black production down 5 points last week to 49 per cent; full finished off a point to 60 per cent, but galvanized up 2 points to 53 per cent.

Cleveland—Sheet mill operations here show a further decline, and a nearby lake mill which customarily operates mainly on Michigan automobile manufacturers' requirements was idle last week, and will remain down this week. Automobile specifications are scarce, the industry nearing the end of production of present models. Some orders for trial sizes of sheets for new models have been placed here. Miscellaneous requirements have fallen off. Prices are steady.

Chicago—Further decline is noted in automotive sheet requirements. These users have shown little inclination to date to cover on third quarter requirements. The upturn in automotive demand is expected to make its appearance some time in July, since 1936 cars will begin to make their debuts in August. Demand for wide sizes continues to present a problem for some makers. Sheet buying from other consumers is only fair. Sellers continue to take a firm stand on prices.

Boston — Sheet buying is light, but fairly well distributed as to finishes. Prices are firm.

New York—Sheet tonnage continues to taper. Requirements of refrigerator manufacturers and of certain other household electrical devices are lighter, and demands from automobile accessory manufacturers are smaller.

Philadelphia — Announcement is expected shortly of the award of 35,000 to 40,000 tons of heavy gage hot-rolled sheets by the Edward G. Budd Mfg. Co., for car frames for Chevrolet passenger cars and trucks. While production on these frames is not expected to begin much before the middle of August, necessity for early award of the steel is indicated. The trade in general expects to see prices hold firmly. Approximately 1000 tons of license tag stock is pending for New Jersey. General sheet demand is the dullest in many weeks.

Cincinnati—Rolling schedules at sheet mills in this district have tapered to 50 per cent, reflecting shrinking demand in the automotive industry. Specifications of miscellaneous users are moderately lighter.

St. Louis—Sheet demand is barely holding its own. The leading producer reports moderate improvement in the call for galvanized material, particularly corrugated roofing. Automotive releases are smaller.

Birmingham, Ala. — Demand for sheets has dropped slightly, and production is off. Sheet mills of the Tennessee Coal, Iron & Railroad Co. still are operating.

"A.W." Super-Diamond
for THE U.S. NAVY
Uncle Sam's "watch dogs" are now using the new "AW" Super-Diamond Pattern! A typical choice—emphasizing the desire to provide the Navy with every safeguard. For "AW" floor plates *are* safe—and permanent.
Be sure your floor plates are really safe—specify "AW" plates. Also available in the reliable standard *Diamond* and *Diamondette* patterns—ferrous and non-ferrous metals.
ALAN WOOD STEEL CO. ESTABLISHED 1826 TRADE "A.W." MARK CONSHOHOCKEN, PA.
SLIP-PROOF • OIL-PROOF
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Pipe

Pipe Prices, Page 63

Pittsburgh—Revision in quantity extras on small lots of seamless commercial boiler tubes is being announced for effect with shipments dated July 1 and after. The revision affects lots of 12,000 pounds and under, and will incorporate the following discounts: 6000 to 11,999 pounds, or feet, plus 25 per cent; 2000 to 5999, pounds, plus 35 per cent, and under 2000 pounds, plus 50 per cent. Larger lots are as follows: 12,000 to 24,999 pounds, or feet, plus 12½ per cent; 25,000 to 39,999 pounds, plus 5 per cent, and 40,000 pounds or feet or over, base.

The oil industry is still the chief pipe buyer and is specifying at a steady rate. In addition, sanitary ware makers are experiencing the best volume of business in several years on home and industrial plant repairs. Standard Sanitary Mfg. Co. is reopening its Woods Run Pittsburgh plant, and expects to resume operations about Aug. 1 after a lapse of about three years at this division.

Cleveland — Except for 600 tons of 12-inch cast pipe for a sludge line, on which Cleveland will open bids June 21, public work in this district offers little encouragement. Many Ohio municipalities are seeking government funds with which to install water and sewer pipe, but no project has yet reached the bidding stage. Shipments of steel pipe in carload lots are holding up well.

Chicago—Activity in cast pipe is relatively slow. Few municipal projects are up for bids and prospects are none too bright at the moment. Municipalities are reported likely to encounter more difficulty in obtaining PWA funds. Some work also has been delayed since NRA went out.

Boston—Cast pipe buying is light with 300 tons purchased by Medford, Mass., among the awards. Considerable volume is held up by lack of financing. Merchant steel pipe demand is steady, but not heavy. Wrought pipe is moving slowly.

New York—For delivery at the Bronx, New York city has closed on 413 tons of cast pipe and 310 tons of fittings, including manhole covers. The pipe went to the Burlington, N. J. foundry, prices holding. The low bid was 40 cents a ton under the second figure. Inquiry is light with buying confined for the most part to small miscellaneous requirements.

Philadelphia—Demand for oil country goods is increasing sharply, with one district tube mill now operating double shifts.

Birmingham, Ala.—While a number of small tonnage orders for pipe have been received recently, total business has been disappointing. Pipe producers here are operating at about 40 per cent.

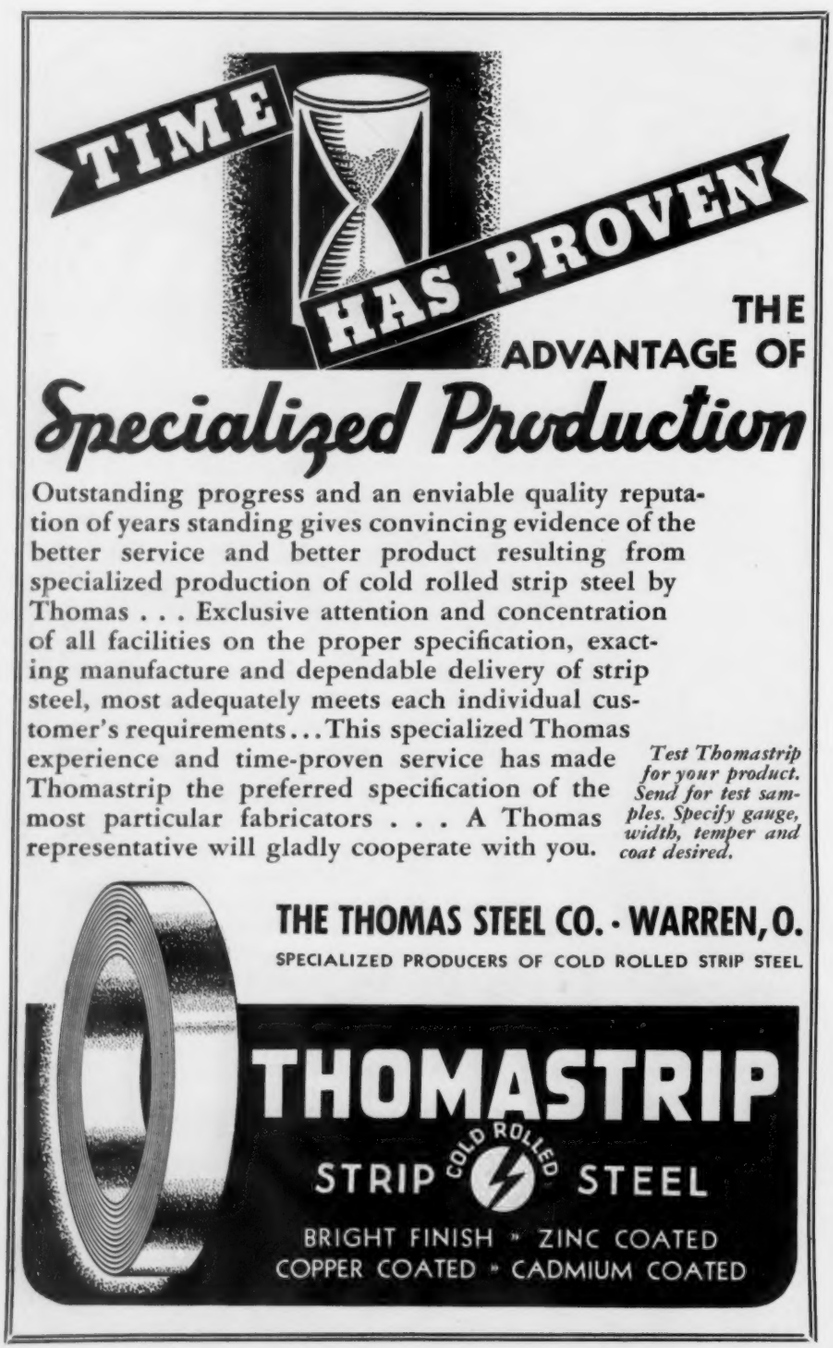
San Francisco—Demand for cast pipe has increased considerably and awards were the second largest for any week of the year, totaling 3443 tons, bringing the aggregate for the year to 20,343 tons, compared with 12,807 tons for the same period last year. United States Pipe & Foundry Co., Burlington, N. J., took 2650 tons of the 3005-ton inquiry for Oakland, Calif. The balance went to Johns-Manville Co. on a special pipe basis.

Seattle—The week's only award in excess of 100 tons went to United States Pipe & Foundry Co., Burlington, N. J., 235 tons for Seattle's Shilshole avenue replacement. Bureau of reclamation, Denver, is asking bids July 8 for 500 tons of pipe, fittings and valves for the Boulder dam power house.

Cast Pipe Placed

2650 tons, 4 to 20-inch, Oakland, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

300 tons, 16-inch and under, Medford,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Outstanding progress and an enviable quality reputation of years standing gives convincing evidence of the better service and better product resulting from specialized production of cold rolled strip steel by Thomas . . . Exclusive attention and concentration of all facilities on the proper specification, exacting manufacture and dependable delivery of strip steel, most adequately meets each individual customer's requirements . . . This specialized Thomas experience and time-proven service has made Thomastrip the preferred specification of the most particular fabricators . . . A Thomas representative will gladly cooperate with you.
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Mass., to Donaldson Iron Works, Emaus, Pa.
235 tons, 16-inch, centrifugal, Shilshole avenue replacement project, Seattle, to H. G. Purcell, Seattle, for United States Pipe & Foundry Co., Burlington, N. J.
158 tons, 4 and 6-inch, Santa Monica, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.
150 tons, 6 and 8-inch, Princeton, Wis., to James B. Clow & Sons, Chicago.
145 tons, 2 to 6-inch, Kamas, Utah, to Pacific States Cast Iron Pipe Co., Provo, Utah.

Cast Pipe Pending

1250 tons, 12-inch, Price City, Utah; bond election June 15.
265 tons, 12-inch and under with fittings, water supply line, state school, Elmira, N. Y.; bids June 18.
206 tons, 20-inch, outfall sewer, San Mateo, Calif.; bids in.
203 tons, fittings for 3 to 24-inch pipe, Chicago; James B. Clow & Sons, Chicago, low.
113 tons, cast iron offset bends; James B. Clow & Sons, Chicago, low.
165 tons, 4 and 6-inch, Woodruff, Utah; bids in.
102 tons, 4-inch, Prairie City, Utah; bids June 25.

Steel Pipe Pending

500 tons, Boulder dam power plant, Boulder City, Nev.; bids July 8.
Unstated tonnage, 3125 feet, various sizes, also 1455 feet of 42-inch penstock pipe, reinforced concrete, lock and dam No. 9, Allegheny river near Rimerton, Pa.; bids soon to Pittsburgh district army engineers.

Strip Steel

Strip Prices, Page 63

Pittsburgh—Strip steel producers' operations are at about half the production three months ago. Most of the loss is traceable to declines in automotive buying, and the best support in the market at present is in tonnage originating with miscellaneous buyers. Strip consumers continue to pay 1.85c, Pittsburgh, for hot-rolled grades, and 2.60c for cold-rolled grades.

Cleveland—General Motors units have purchased some small lots of strip steel, but the volume from automobile manufacturers and partsmakers is diminishing. Manufacturers are expected to complete assemblies of present models late this month and in July, and are now negotiating with makers for parts for new models. Miscellaneous strip requirements are lighter.

Boston—Caution continues to mark the attitude of cold-rolled strip buyers, who are taking in material as needed, often in small lots for immediate delivery. Hot strip demand is not active.

Chicago — Strip sellers report orders are spotty and irregular. Consumers' stocks appear to be light, with new purchases held to requirements as they arise. Automotive tonnage continues to recede and no break in this trend is looked for until late July. Prices are unchanged and steady.

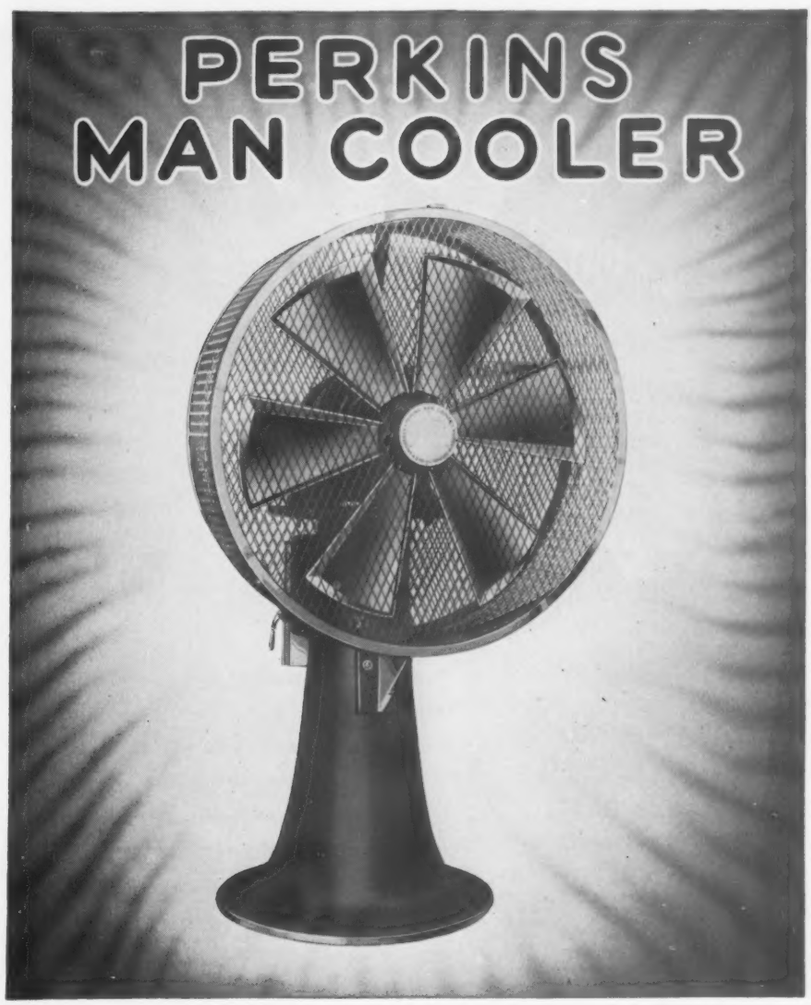
New York—Narrow strip is moving slowly and is particularly affected by smaller demand from manufacturers of automobile accessories. Prices are steady.

Philadelphia—Narrow strip is moving slowly, with the practice of many consumers of slitting sheets an important factor in restriction of tonnage. Prices, however, are steady at 2.16c, Philadelphia, for hot strip and 2.91c, for cold strip.

Refractories

Refractories Prices, Page 64

Pittsburgh—National Tube Co., Pittsburgh, has issued instructions to proceed with complete relining of one of its Lorain, O., blast furnaces. This is the largest refractory brick job in several months, since the contract placed by Ford Motor Co. for relining of one of the Dearborn blast furnaces. Prices are steady.



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ENGINEERS AND MANUFACTURERS

Shapes

Structural Shape Prices, Page 62

New York—Bids opened late Friday afternoon by the Henry Hudson bridge authority, New York, for the superstructure of the bridge at Spuyten Duyvil, New York, which will require 6200 tons of shapes, found the American Bridge Co., Pittsburgh, low at $865,208.59. This is the largest active tonnage here. Awards during the week were relatively light.

Pittsburgh—American Bridge Co., Pittsburgh, has formally entered contract for 7800 tons of structural shapes, piling, and other steel requirements to be used in dam No. 26 on the Mississippi river at Alton, Ill. Blaw-Knox Co., Blawnox, Pa., has been awarded 480 tons of TVA transmission towers. Plain structural shapes are firm at 1.80c, base, Pittsburgh.

Chicago—A continued lull is noted in structural steel. Several small projects are before the trade here aggregating only approximately 1000 tons. Business during the past week was the leanest in some time for most sellers. There is particularly a dearth of state bridge jobs and private construction.

Cleveland — While structural shapes are firm at 2.00c, base, Cleveland, reports are current among fabricators of concessions on steel piling. Competition for 800 tons of piling for a public bridge in Ohio was particularly keen. Nickel Plate railroad has awarded several small bridges, and will take bids soon on 1000 tons for a bridge at the Ohio-Pennsylvania state line.

Boston—Structural steel is slightly more active, with award of 450 tons for railroad bridge, Hartford, Vt. Inquiry is sluggish. Prices on plain material are unchanged.

Philadelphia—Apart from a few scattered small jobs, little structural work is actually pending here. Among scattered awards are 215 tons for a plant project at Cumberland, Md., and 200 tons for a county bridge at Plymouth, Pa. Shape prices are steady, but fabricated material prices are unsettled. Shapes are 1.90c, Bethlehem, Pa., or 2.015c, Philadelphia.

Birmingham, Ala.—Contracts for structural steel are not coming in steadily, though shops still have some tonnage to fabricate. Upwards of 10,000 tons will be moved to the West and Northwest during the next few weeks, on recent awards.

San Francisco—Activity has increased and while bookings did not exceed 1500 tons a number of new projects have come into the market. Spillway Builders Inc., Kansas City, Mo., were low bidders on schedules 1 and 2, for 9413 tons of piling for a retaining wall at the Fort Peck, Mont., dam, at $946,650. The Central valley water project, California, up for bids soon, will require 6000 tons of shapes, 5500 tons of reinforcing bars, and 1500 tons of bolts and brackets.

Seattle—Interest centered this week at Coulee, Wash., where the general contractors considered bids for 8000 tons of shapes for a trestle to cross the Columbia river. No announcement was made. Colby Steel

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(AT CASS AND BAGLEY AVENUES)

DETROIT

Shape Awards Compared

	Tons
Week ended June 15	6,255
Week ended June 8	5,406
Week ended June 1	6,440
This week 1934	16,311
Weekly average, 1934	16,284
Weekly average, 1935	13,876
Weekly average, May	11,525
Total to date, 1934	422,575
Total to date, 1935	333,033

& Engineering Co., Seattle, was awarded 400 to 600 tons for four cantilever cranes, fabricating to be done by Wallace Bridge & Structural Steel Co., Seattle. These cranes will be used at the Coulee dam. Bids for steelwork at Bonneville, Oreg., dam will be received by United States engineers, Portland, June 25, 6300 tons being required.

Shape Contracts Placed

850 tons, metal storage and cafeteria building, Pontiac, Mich., for Fisher Body Corp., to Jones & Laughlin Steel Corp., Pittsburgh; also 150 tons of reinforcing bars to same interest.

750 tons, building for National Can Co., Maspeth, Long Island, to Joseph T. Ryerson & Son Co., Chicago.

480 tons, transmission towers for Tennessee valley authority, Knoxville, Tenn., to Blaw-Knox Co., Blawnox, Pa.

450 tons, bridge No. 9, Central Vermont railroad, Hartford, Vt., to American Bridge Co., Pittsburgh.

400 tons, for Woolworth building, Cincinnati, to American Fabricating Co., Philadelphia.

400 to 600 tons, four cantilever cranes Coulee, Wash., dam project, to Colby Steel & Engineering Co. and Wallace Bridge & Structural Steel Co., Seattle.

230 tons, American Can Co., Tampa, Fla., to Jones & Laughlin Steel Corp., Pittsburgh.

230 tons, building, General Motors Co., Charlotte, S. C., to Southern Engineering Co., Charlotte.

215 tons, factory building, Celenese Corp., Cumberland, Md., awarded through the Hughes-Foulkrod Co., Philadelphia, to the Belmont Iron Works, Eddystone, Pa.

215 tons, bridge, Luzerne county, Plymouth, Pennsylvania, to American Bridge Co., Pittsburgh.

200 tons, grandstand, Revere, Mass., to New England Structural Co., Everett, Mass.

200 tons, building, Dover, N. J., for Dover Boiler Works, to Bethlehem Fabricators Inc., Bethlehem, Pa.

200 tons, soya bean plant, Ford Motor Co., Detroit, to Whitehead, & Kales, Detroit.

175 tons, building, Waterloo, Iowa, for John Deere Tractor Co., Waterloo, to Gage Structural Steel Co., Chicago.

165 tons, indoor tennis court, Sewickley Heights, Pa., to Keystone Engineering Co., Philadelphia.

150 tons, plantation buildings for Hawaiian interests, to Isaacson Iron Works, Seattle.

140 tons, building, Dartmouth college, Hanover, N. H., to Lyons Iron Works Inc., Manchester, N. H.

130 tons, two bridges for Nickel Plate railroad, to Fort Pitt Bridge Works, Pittsburgh.

130 tons, tunnel forms, metropolitan water district, Los Angeles, to Pacific Iron & Steel Co., Los Angeles.

115 tons, bridge, New river, Virginia, to Bethlehem Fabricators Inc., Bethlehem, Pa.

115 tons, three 60-foot I-beam spans, Lancaster county, Nebraska, to St. Joseph Structural Steel Co., St Joseph, Mo.

110 tons, bridge, Trenton, Mich., to R. C. Mahon Co., Detroit.

105 tons, state bridge, project NRH-195, Champney river, Georgia, to Ingalls Iron Works Co., Birmingham.

100 tons,, steel bridge, Monterey county, California, to unnamed interest.

Shape Contracts Pending

8000 tons, construction trestle, Coulee, Wash., dam project; bids in.

7000 tons, and 1500 tons of bars, St. Louis postoffice; general contract bids rejected as St. Louis chamber of commerce protests use of Indiana limestone in preference to Missouri marble. New bids to be taken soon.

6200 tons, superstructure, Henry Hudson bridge, Spuyten Duyvil, New York; American Bridge Co., Pittsburgh, low at $865,208.59; bids June 14.

4000 tons, high school, Kansas City, Mo.

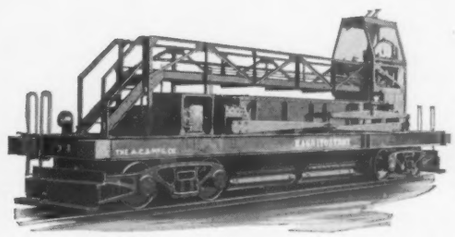
2500 tons, structural and miscellaneous steel, New York approach and plaza, Manhattan-Weehawken, N. J., Hudson river tunnel; Cornell Contracting Co., New York, low on both alternates, $2,770,204 for cast iron tunnel segments, and $2,720,304 for steel tunnel lining. If latter is accepted additional 890 tons of steel will be required.

1200 tons, radial gates, Wheeler dam, Sheffield, Ala., for Tennessee valley authority, Knoxville, Tenn.; Worden Allen Co., Milwaukee, low on June 7 bids.

1000 tons, bridge for Nickel Plate railroad, Cleveland, at Ohio-Pennsylvania state line; bids soon.

1000 to 2000 tons, paper mill buildings, Savannah, Ga., for Union Bag & Paper

ATLAS SCALE CARS



20 Ton — Double Compartment Scale Car. Journals provided with self aligning anti-friction bearings. Equipped with Atlas Indicator and Recorder.

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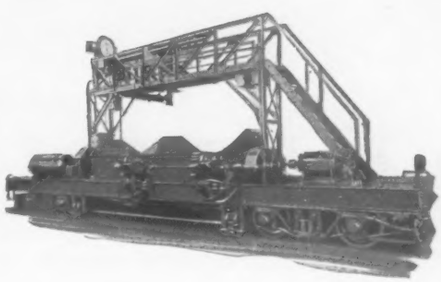

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1000 tons, power plant at Norris dam, for Tennessee valley authority, Knoxville, Tenn.

750 tons, strucutral steel, reinforcing bars, and other rolled steel products for lock and dam No. 9, near Rimerton, Pa.; bids to Pittsburgh district army engineers soon.

300 tons or more, municipal bridge, on Guilford avenue, over the Pennsylvania railroad tracks, Baltimore; bids asked.

240 tons, Honker Cut bridge, Stockton, Calif.; bids rejected and new bids soon.

230 tons, school, Anaheim, Calif.; bids July 2.

280 tons, bridge, Milliken's Crossing, Me., bids in.

250 tons, high school, Teaneck, N. J.

250 tons, two warehouse buildings for the American Oil Co., Baltimore, for erection at Hays, Pa.

225 tons, spillway gates, Augusta, Ga.

193 tons, Hassayama river bridge, Maricopa county, Arizona, for state; bids about June 21.

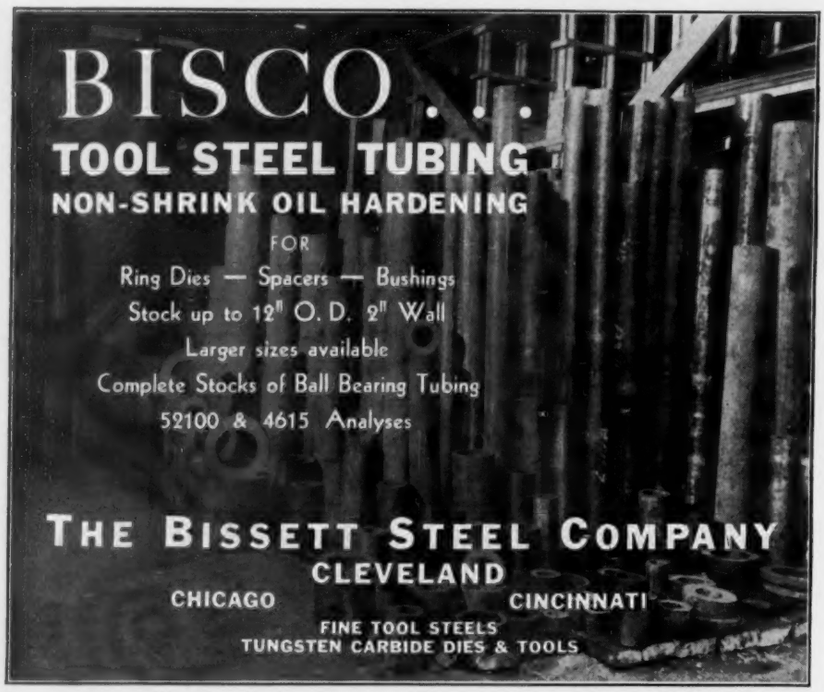
170 tons, building, Anniston, Ala., for S. H. Kress Co.

157 tons, two state bridges, Monterey county, California; bids opened.

115 tons, head frame, Pacific Coast Borax Co., Los Angeles; bids being taken.

100 tons, state bridge, Monterey,, Calif.; bids soon.

100 tons, Grant street bridge, Washingtons; bids opened June 13.



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Reinforcing

Reinforcing Bar Prices, Page 63

New York—Five projects account for the bulk of reinforcing steel actively pending, several thousands tons. Buying and new inquiry are light. Mills are holding prices firmly on billet steel bars, but fabricators and distributors are confronted with pressure by general contractors for concessions. This has resulted in delay in placing some volume.

Pittsburgh—John F. Casey Co., Pittsburgh, is preparing to purchase 800 tons to 1000 tons of new billet steel reinforcing bars for the Liberty tubes plaza, Pittsburgh, first of the nine PWA financed projects for Allegheny county. This project also requires 750 tons of structural steel. Design of the Woodville, Pa., home for Allegheny county, Pa., has been changed from a structural steel to a reinforcing concrete job, and W. F. Trimble & Sons Co., Pittsburgh, general contractor, has closed on about 500 tons of new billet reinforcing steel. New billet steel bars hold at 2.05c, Pittsburgh, for cut lengths in carload quantities. Rail steel bars, however, at 1.95c, Pittsburgh, have been under some pressure.

Chicago—New inquiry for reinforcing bars is reported the lightest in months. Two or three jobs, however, are providing some interest. One of these is for 700 tons for another section of the Chicago sanitary district sewer. Another is for 1000 tons for the Chicago & North Western's overhead crossings. Several small jobs for less than 100 tons have been awarded and are pending. No breakdown in the price structure has developed.

Cleveland—Negotiations are under way for the purchase of 1037 tons of reinforcing bars for the Cedar-Central government housing project here, by the George A. Fuller Co.,

Concrete Awards Compared

	Tons
Week ended June 15	2,634
Week ended June 8	4,742
Week ended June 1	4,981
This week in 1934	5,078
Weekly average, 1934	4,084
Weekly average, 1935	4,877
Weekly average, May	3,837
Total to date, 1934	124,521
Total to date, 1935	117,064

Washington, awarded the general contract. This is the first large requirement in the market here in some months. The project also will take 250 tons of steel lintels. Some other fairly substantial tonnages are pending in nearby territory for early award. Bids for II Muskingum, Ohio, conservancy district bridges, taking several thousand tons of bars and shapes, which were called for June 20 have been postponed to various dates from June 25 to July 12.

Boston—Award of 1000 tons for a caisson dam core wall, Enfield, Mass., is the largest purchase of reinforcing steel in several months. This removes a good part of the total tonnage active in this district. There has been some unsuccessful pressure for lower prices on the part of few general contractor buyers.

Philadelphia—Dullness still prevails in the reinforcing bar market. No orders of size have been reported in two or three weeks and little is in immediate sight. Billet steel bars, cut lengths, continue 2.36c, delivered Philadelphia.

San Francisco—The bar market was the least active one, less than 600 tons being placed during the week. The largest letting involved close to 200 tons for Montgomery Ward & Co. building in Sacramento, Calif. Pending business does not exceed 4000 tons.

Seattle—Only small tonnages are pending. Improvement is expected as quickly as federal funds are allocated for grade elimination projects. State highway jobs are taking less concrete bars as bituminous black top surfacing is used more frequently. Hoffman Construction Co., Portland, has the contract at $89,901 for an undercrossing at La Grande, Oreg., requiring 130 tons.

Reinforcing Steel Awards

1000 tons, reinforced caisson core wall, Quabbin reservoir dam metropolitan district commission, Boston, at Enfield, Belchertown and Ware, Mass., to Concrete Steel Co., New York; C. J. Maney Co. Inc., and B. Perini & Sons Inc., Boston, general contractors.

440 tons, incinerator, Flushing, Queens, New York, to Joseph T. Ryerson & Son Co., New York; through William Kennedy Construction Co.

280 tons, four mile sewer, Hazelwood, Pittsburgh, to W. N. Dambach Co. Inc., Pittsburgh, with Jones & Laughlin Steel Corp., Pittsburgh, supplying new billet bars; Mike Manella, Oliver building, Pittsburgh, general contractor.

209 tons, including 96 tons joists, Montgomery Ward & Co. building, Sacramento, Calif., to unnamed interest.

150 tons, metal storage and cafeteria building at Pontiac, Mich., for Fisher Body Corp., to Jones & Laughlin Steel Corp., Pittsburgh; also 850 tons of structural shapes to same interest.

140 tons, Muskingum conservancy district work, Zoarville, O., near Dover, O., to Jones & Laughlin Steel Corp., Pittsburgh; through George Lemmon Construction Co., St. Louis and Kansas City.

130 tons, including 45 tons of shapes, state undercrossing, LaGrande, Oreg.; Hoffman Construction Co., Portland, general contractor.

110 tons, building, Mt. St. Joseph college, West Hartford, Conn., to Concrete Steel Co., New York.

105 tons, girls high school, San Francisco, to Gunn, Carle & Co., San Francisco.

100 tons, sewer, Hastings, N. Y., to Truscon Steel Co., Youngstown, O.; through Richie & Parker Co.

Reinforcing Steel Pending

1400 tons, New York approach and plaza Manhattan-Weehawken, N. J., Hudson river tunnel, Cornell Contracting Co. low on both alternates. This tonnage of bars will be required for the alternate requiring steel tunnel lining, and 1130 tons will be required if cast iron segments are used.

1000 tons, overhead crossings, Chicago & North Western railroad.

900 tons, Liberty tubes plaza, Pittsburgh; John F. Casey Co., Pittsburgh, low on general contract.

700 tons, additional sewer section, Chicago sanitary district, contract No. 1.

580 tons, substructure, Henry Hudson

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DEEP DRAWN SHELLS AND SHAPES

bridge, Spuyten Duyvil, New York; Thomas Crimmins Co., low at $272,668.50; bids June 14, Henry Hudson bridge authority, New York.

550 tons, mesh, state highways, Queens and Erie counties, New York; bids July 2.

480 tons, Allegheny county home, Woodville, Pa.; W. F. Trimble & Sons Co., general contractor.

285 tons, Folger avenue crossing, Berkley, Calif.; general contract to J. F. Knapp, Oakland, Calif.

140 tons, grade crossing, Baltimore & Ohio railroad, Menford, N. Y.

103 tons, Cedar-Central government housing project, Cleveland; general contract to George H. Fuller Co., Cleveland; project also requires 250 tons steel lintels.

Unstated tonnage, reinforcing walls around tanks at Hays, Pa., for the American Oil Co., Baltimore; P. K. Construction Co., Pittsburgh, is reported to have been awarded the general contract.

Wire

Wire Prices, Page 63

Pittsburgh—Jobbers and users of manufacturing wire are cautious but are paying the full schedule of prices. Wire mill operations tend downward, with no early improvement expected.

Cleveland—Established prices are applying on all shipments and new orders for wire and wire products. The market, however, is quieter, due mainly to recession in nut and bolt production.

Chicago — Demand for wire from the general manufacturing trade continues to hold up well, but continued slackening in automotive requirements is noted. No deviation from current prices is indicated in any direction, although consumers are confining new commitments to day-to-day needs. Fencing demand from the agricultural sections is not coming out in the volume anticipated due to the inclination to await market developments. Despite this, total incoming business and specifications are sufficient to hold operations to recent levels.

Boston—Incoming wire volume is holding better than expected with less pressure for lower prices than anticipated by some sellers. Manufacturers' wire and specialties lead in demand while heavier products continue to lag. Consumers still order shipments close to requirements, stocking little and showing slight interest for needs far in advance.

San Francisco—Demand is holding up well, although most orders are relatively small. Bids have just been opened on 217 tons of insulated wire and cable for the power plant at Boulder dam, Nev.

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Pig Iron

Pig Iron Prices, Page 64

Pittsburgh—A large nonintegrated pig iron user in this district has placed its third quarter bessemer iron requirements, several thousand tons at least, with a district independent steelworks. Reopening of the Standard Sanitary Mfg. Co. plant on Preble avenue, Pittsburgh, the first operations there in three years, will mark the return of a former heavy buyer in the local market. This concern operates three cupolas, each of 6-ton capacity, and is a large potential producer of gray iron castings.

Cleveland—Sales and shipments continue to decline. A few carloads of merchant iron were sold here during the week, including some for production of new automobile dies. Prices are firm.

Chicago—Both new business and shipments in pig iron are receding. Consumers are confining purchases to actual needs. June shipments to date are running somewhat under the May rate. This is occasioned largely by the fact one large consumer is out of production this month but will resume in July. Prices are firm.

Boston—Domestic pig iron prices are steady, although demand is light, offering little test. There have been no cancellations or hold-ups on deliveries. The aggregate volume, however, has dropped to a low point with consumers taking in small shipments as needed. Foreign iron in storage at several New England seaboard points can be obtained for $1 or more a ton under domestic iron.

New York—Third quarter interest in pig iron is still lacking, with buying restricted principally to small lots for spot needs. Prices are unchanged.

Philadelphia—Little future interest is noted in pig iron, with buying still of a spot character. Prices are steady. Approximately 2500 tons of English low-phosphorus pig iron arrived in Baltimore recently, with 2000 tons for the account of a mid-Pennsylvania consumer. This latter was noted as placed several weeks ago.

Cincinnati—Shipments of pig iron tend downward moderately but stocks are low and melters are in the market for immediate needs. Some inquiries for third quarter requirements have been issued. A Southern Ohio melter is inquiring for 500 tons of northern foundry iron.

St. Louis—Shipments of pig iron are holding up well, and purchasing of small tonnages is in considerable aggregate volume. Interest in third quarter tonnage, however, is negligible. Relatively the most active section is the farm implement industry,

which has receded only slightly from its high rate of operations. Replacement of old farm machinery has been made necessary by floods.

Birmingham, Ala.—Consumers of pig iron are buying in small lots with no improvement noted in the total. Expectations of greater activity have not been attained as yet, though melters report prospects bright. Prices hold steady.

Seattle—Foundry operations have been reduced due to the strike in the logging and lumber industries, and many plants are marking time. Demand for pig iron and coke is correspondingly less. No change in price for the third quarter has been announced, Columbia iron being quoted at $17.50 base, $19 furnace, f.o.b. Provo, Utah, for No. 1. British coke dominates the market, consumers preferring it to domestic grades. Imported coke is unchanged at $12.50, delivered here.

Toronto, Ont.—Sales are holding at a steady level with the daily melt between 40 and 45 per cent. Melters continue to take iron in small tonnage lots for spot delivery, but no forward delivery contracts have been placed. Malleable iron has shown some improvement. Prices are firm and unchanged.

Scrap

Scrap Prices, Page 65

Pittsburgh—A 50-cent per ton decline in scrap was general last week. Because of declining mill operations a district independent has been able to pick up small lots of dealer heavy melting steel scrap at $11.75 a ton, delivered in this district. Brokers, however, are not willing to offer material short at present prices and point to the marked strength in railroad scrap, all of which is finding a consuming point without any price weakness. For example, the Pennsylvania railroad's June accumulation of heavy melting scrap brought $13.20 locally; rails, $13.40, and specialties at close to $15.

Cleveland—Shipments on contracts form the only activity in steel and iron scrap. Supplies of consumers are large and buying is likely to be delayed. Prices are holding firmly in spite of this situation. Holders are unwilling to sell at present prices.

Chicago — Heavy melting steel scrap is down 25 cents a ton to $9.75 to $10.25. Tone of the market is somewhat easier but no general decline in prices is in prospect. The last sale of steel scrap to a district consumer was at $10 a ton. It is rumored that consumers have offered $9.50, but so far have found no takers. In fact, brokers are finding it necessary to pay at least $9.75 in covering contracts.

Boston—Some weakness has developed in scrap prices with shipments to the Pennsylvania district and Worcester, Mass., decidedly light. Bulk of activity continues for export and wanted grades for boat loading, including heavy melting steel, are unchanged. Forge flashings and forge fire scrap, skeleton and stove plate are off 25 cents. At Providence, R. I., several thousand tons of textile and No. 2 cast are being loaded for foreign shipment.

New York — For export, No. 2 heavy melting steel has been advanced 50 cents a ton, dock, shippers now paying $7.50. This is due largely to heavier releases against contracts by Italy and also some new buying from that country. No. 1 heavy melting steel is firm with a few instances of better than $8.50 being paid at dock. Other grades are unchanged with domestic shipments light.

Philadelphia—Scrap prices continue unchanged, although in some important grades there has been no real test in two or three weeks. No. 2 steel for domestic consumption is a case in point. This grade is still $9.50 to $10, delivered, but the spread is nominal and whether new business would bring out a price as high as $10 is a question. Meanwhile the export market on No. 2 scrap and also No. 1 is unchanged, as far as local wharf prices are concerned. The principal grades of cast scrap for domestic consumption are being bought in sufficient quantities to afford some test, and no change in these grades has developed.

Detroit—While iron and steel scrap prices are unchanged on the basis of $8 to $8.50 for No. 1 steel and $8.50 to $9 for hydraulic compressed sheets, more elements of weakness are evident. Consumers remain aloof and some have held up shipments. For the long pull, the market prospect is good, but at the moment weakness and uncertainty predominate.

Cincinnati — Despite a reduction a week ago in dealer quotations, the iron and steel scrap market remains weak, in the absence of consumer interest.

St. Louis—Offerings of iron and steel scrap from all sources continue light, but ample for all demands. Both buyers and sellers are disposed to await developments before making commitments, and not much change from this condition is looked for until well into July.

Birmingham, Ala. — Continued quiet prevails in scrap, stocks are

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heavy on dealers' yards and melters are buying in as limited quantities as possible. Quotations are unchanged.

Seattle—The export market is weaker. Japan lacks interest at the moment due to oversupplies. Dealers in steel in Japan have started an agitation for government intervention for lower prices to the consumer for the finished product, in an effort to enlarge sales. The few offers from the Orient are generally about $1 below those of a month ago.

Toronto, Ont.—While business in iron and steel scrap is dull local dealers look for an early change for the better. Steel Co. of Canada, Hamilton, Ont., is taking delivery of heavy melting steel and some good lots have been shipped recently. Turnings, however, are moving slowly. Sales by Montreal dealers have picked up recently and it is expected that large shipments will be made to Britain this season.

Tin Plate

Tin Plate Prices, Page 62

Pittsburgh—Unfavorable weather in most agricultural sections has been the chief cause for retarding can-makers' specifications for tin plate. With the assurance that mill warehouse stocks will be moving more rapidly shortly, tin plate producers are maintaining their operating schedules at an average of 75 per cent. Individually, three mills are operating at 100 per cent; four mills at 70 to 75 per cent, this bracket including the leading interest, and two producers at the 50 per cent level.

New York—Tin plate specifications while in smaller volume than a month ago still are heavy. Some sellers look for substantial releases until well into the middle of summer.

Warehouse

Warehouse Prices, Page 66

Pittsburgh—Prices on warehouse steel products are steady and there has been no report of price cutting. Shipments to consumers are less than a month ago.

Cleveland — The number of warehouse orders shows little change from the daily average in May, but tonnage is considerably lower. Warehouse prices are firm.

Chicago — Warehouse steel sales are holding up unusually well, showing only a slight recession from the May volume. Prices are being maintained at recent levels.

Boston — Structural steel out of warehouse in the Boston metropolitan district is now 3.19c on orders of 40,000 pounds and over. This decline of one cent per 100 pounds follows a recent freight rate adjustment and other products are unchanged. Volume, mostly in small miscellaneous orders, holds close to the current rate, although a few jobbers report a slight falling off.

New York — Volume with warehouses is steady, June thus far showing little variation from the previous two months. The number of orders, generally small, is well distributed. Both mill and warehouse prices are steady and unchanged.

Philadelphia — Warehouse business continues on the lighter basis noted since the last week in May. Most jobbers look for several weeks of quiet business. Prices are unchanged.

Detroit—Demand for iron and steel out of warehouse is a little brisker than earlier in the month, due partially to increasing requirements by tool and die interests. The large Fisher program at Lansing, Mich., Janesville, Wis., and Pontiac, Mich., is quickening demand from conveyor manufacturers.

Cincinnati — Steel jobbers here are voluntarily complying with code conditions and prices, which remain firm. A slight decline in demand, compared with May, is in evidence.

St. Louis—Buyers of iron and steel from store are still disposed to hold off on commitments other than for immediate requirements. Galvanized sheets are moving in somewhat larger volume than heretofore.

Seattle—Volume has been adversely affected by cessation of operations in lumbering, orders generally being from federal and state projects. Prices are unchanged.

Iron Ore

Iron Ore Prices, Page 65

Cleveland—American Federation of Labor organizers who were sent into the Lake Superior district have set June 16 as the date of a strike at the underground mines in Michigan, evidently with the thought of synchronizing it with the coal strike called for that date.

Iron ore mine operators, however, do not believe there will be a walkout. The same organizers endeavored to pull a strike last month, but the miners refused to quit. At certain points where they have some sympathizers the organizers have continued their activities.

To date the mine companies have

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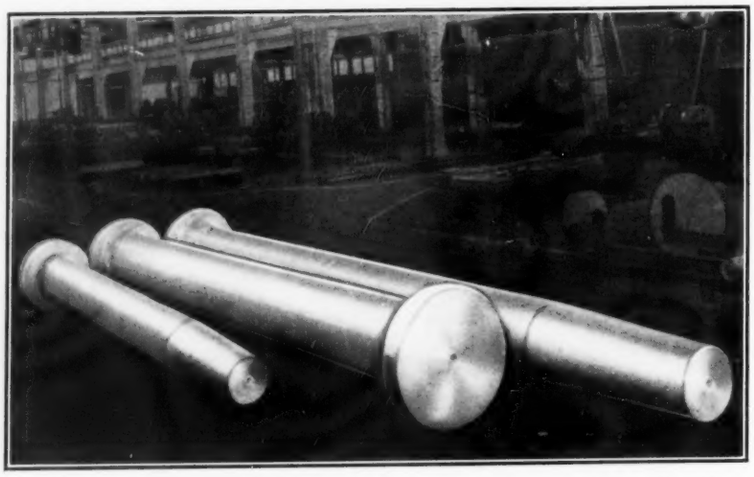

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not been served with formal demands by either their employes or organizers; hence, when a federal mediator was sent to the district, evidently at the instance of the federation, there was nothing to mediate. The men were at work. Only interviews with the organizers have been printed to the effect that there would be a demand for a 50 per cent wage increase.

Iron ore shipments continue light. Stocks at Lake Erie ports June 1 were but 257,954 tons less than on that date last year. The Lake Superior Iron Ore association reports the following receipts at Lake Erie ports for the season to June 1, and shipments therefrom to interior furnaces:

	Receipts	Shipments	Dock Balance June 1, 1935
Buffalo	358,553	65	2,806
Erie	119,009	129,169	85,974
Conneaut	476,977	618,549	1,548,986
Ashtabula	205,356	337,757	1,144,850
Fairport	72,761	71,176	387,403
Cleveland	483,346	595,603	610,636
Lorain	348,848	224,514	12,527
Huron	94,854	96,280	316,954
Toledo	167,528	66,857	11,705
Total	2,327,232	2,139,970	4,121,841
Comparative 1 yr. ago	1,467,591	1,680,671	4,379,795

Receipts at other lake ports:

	Tons
Detroit	192,280
Indiana Harbor	313,113
Gary	186,563
South Chicago	369,140
Sault Ste. Marie, Ont.	
Hamilton, Ont.	109,344
Total	1,170,440
Comparative 1 year ago	682,743

The Michigan tax commission has set a valuation of $62,370,000 on ore mines in that state for 1935 taxation, a reduction of $3,083,000 from 1934.

Metallurgical Coke

Coke Prices, Page 63

Standard furnace coke has weakened to a quotable range of $3.40 to $3.60 per ton. The minimum represents transactions at less than the former code minimum of $3.60, and large sellers have been obligated to meet quotations of $3.50, Connellsville, Pa., ovens, frequently, with the result that $3.60 has been obtained only for rush deliveries. In spite of the weakness in standard furnace coke, domestic sizes have firmed up from a former price of $3.20 to $3.30 to about $3.50 per ton. The market on foundry coke is relatively stable at $4.60 per ton for common grades, and $5.10 to as much as $5.35 for the premium grades. Producers' coke accumulations are heavy.

Shipments of foundry by-product coke are slackening at Chicago, but at Cincinnati they are steady. St. Louis consumers are holding the recent rate.

Semifinished

Semifinished Prices, Page 63

Shipments of semifinished steel by producers in the Pittsburgh district in the first half of June were only off about 5 per cent from those of the same period in May. Most of this loss is attributable to a decline in sheet bars, as tin bar specifications are steady. Buying of billets and wire rods is sharing the down movement, but skelp orders are better. The market is quoted firmly at $28, Pittsburgh, for sheet bars, $27 for billets, and $38 for wire rods. Forging quality carbon billets are $32, alloy billets $40, and uncropped alloy ingots, $40.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 63

All bolt and nut producers have extended an extra 10 points off list to jobbers for carload lots where bolts and nuts are to be shipped to the jobber's stock only. The market otherwise remains 70-10-5 off list. The large rivet market remains 2.90c, base, Pittsburgh or Cleveland, 3.00c, Chicago, and small rivets are quotable at 70-5 off list. The contract period for third quarter is now practically completed, but current specifications for bolts, nuts, and rivets are in small lots and aggregate a low volume of tonnage.

Steel in Europe

Foreign Steel Prices, Page 66

London—(*By Cable*)—Agreement has been reached between the British Steel Federation and the European steel cartel for a five-year period, Continental steel imports into Great Britain to be 670,000 gross tons for the first year, and 525,000 tons for each of the next four years.

Production of pig iron in Great Britain in May was 558,900 tons, at a daily rate of 18,029 tons, compared with 526,300 tons and a daily rate of 17,543 tons in April. Active stacks numbered 97 on the last day of May, an increase of one over April. Output of steel ingots and castings in May was 853,300 tons, at a daily rate of 31,600 tons, compared with

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808,700 tons in April, with a daily rate of 31,104 tons.

British exports to neutral markets are at about the 1934 average. Demand for pig iron is sufficient to absorb production, and stocks are low. Whitsuntide is interrupting the trend of new business but potential requirements are substantial. Scottish shipyards have obtained some further contracts. Domestic sheet trade is good and sales of tin plate are fair, but exports of galvanized sheets are dull.

The Continent reports export trade quiet. Belgium has booked some tonnage for China. German exports are fairly good.

Coke By-Products

Coke By-Product Prices, Page 63

New York—Demand for distillates is active. Prices are firm. Current production is going directly into consumption. Buying of other coke oven by-products is slower, and prices are unchanged.

Ferroalloys

Ferroalloy Prices, Page 64

New York—Third quarter contracting for ferromanganese and domestic spiegeleisen is now under way, at unchanged prices as announced late last month. Meanwhile, current specifications are declining. Ferromanganese is $85 duty paid, Atlantic and Gulf ports, and domestic spiegeleisen, 19 to 21 per cent, $26, Palmerton, Pa. on quantities up to 50 tons and $24 on 50 tons and over.

Nonferrous Metals

Nonferrous Metal Prices, Page 64

New York — Nonferrous metals held generally steady last week despite uncertainty over the future of NRA and unsettling factors in the lead and zinc markets.

Copper—House Ways and Means committee agreed on extension of the so-called nuisance taxes which include the 4-cent copper tariff for a period of two years. Fabricators agreed to continue to buy copper from custom smelters and mine producers as under their blue eagle buying agreements, except that purchases will be made only as needed and not in accordance with former provisions of delivery and tonnage. Immediate outlook is for continued price steadiness at 9.00c, Connecticut. Metal in the outside market was still available at 8.25c to 8.50c, Connecticut.

Lead—Offering of metal by an independent producer at $2 a ton under the ruling price level at mid-week temporarily disrupted the market. This metal was quickly absorbed and the market was quotably unchanged at 4.00c, New York.

Zinc—A limited amount of prime western was offered Tuesday $1 under the producers' market but this was absorbed by the end of the day. Closing prices were unchanged at 4.30c, East St. Louis, for prime western spot.

Tin—Increase in export quotas to 50 per cent from 45 per cent of standard tonnages was not deemed sufficient to balance future demand and supplies. This had a strengthening effect on the market and spot Straits tin rose to around 51.25c compared with Monday's close of 50.45c.

Aluminum—Virgin and remelt aluminum showed no price change.

Quicksilver

New York—Quicksilver prices are lower this week at $72.50, a virgin flask of 76 pounds in lots of 15 to 25 flasks, and $71.50 each in lots of 100 flasks.

Activities of Steel Users and Makers

GREAT LAKES STEEL CORP., Detroit, subsidiary of National Steel Corp., Pittsburgh, has awarded to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a contract for about $1,000,000 and to General Electric Co., Schenectady, N. Y., for about $1,400,000 for electrical equipment for its new broad strip mill at Detroit. The latter contract includes main drive motors, metalclad switchgear and smaller motors for auxiliary drives. General Electric has also booked an order for small induction motors, generator sets and control panels for the hot strip mill of Carnegie Steel Co., at McDonald, O.

♦ ♦ ♦

Edward G. Budd Mfg. Co., Philadelphia, has placed an order with Timken Roller Bearing Co., Canton, O., for bearings and boxes for all axles of the Chicago, Burlington & Quincy railroad's new streamlined train "Mark Twain," the fourth of its Zephyr series, all of which have this bearing equipment.

♦ ♦ ♦

Universal Power Corp., 1718 Clarkstone road, Cleveland, has appointed O. C. Underwood, 11249 South Hermosa avenue, Chicago, its representative in the Chicago district for arc welders, accessories and electrodes. W. S. Murphey, Charlotte, N. C., has been appointed representative in North and South Carolina.

♦ ♦ ♦

T. A. Canty, Baltimore, distributor of arc welding equipment and supplies manufactured by the Lincoln Electric Co., Cleveland, has moved from 116 East Centre street to larger quarters at 1023 Cathedral street, to accommodate increase of business. Complete stock of arc welding machines, electrodes and supplies will be maintained. The new location is of three stories, in the machinery and

METALLIZING Slashes Costs on Machine Shop and Maintenance Work

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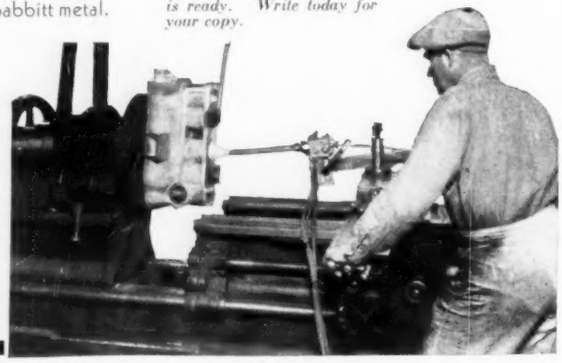

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automotive section. Welding operators will be given instruction in a special booth and designers with problems will be assisted in predetermining location and intensity of stresses in welded joints by use of a polariscope maintained for that purpose.

♦ ♦ ♦

Bantam Ball Bearing Co., South Bend, Ind., is building an addition to its plant to increase its floor space about 60 per cent. The addition is necessitated by increased volume of business, the first five months of 1935 showing a total more than 60 per cent over the same period in 1934.

♦ ♦ ♦

Wheeling & Lake Erie railroad has placed an order with Timken Roller Bearing Co., Canton, O., for bearings and boxes for all driving axles of two switching locomotives and for inboard-type trucks for use under tenders for these locomotives. The locomotives are to be built at the road's shops at Brewster, O.

♦ ♦ ♦

American Shear Knife Co., Homestead, Pa., manufacturer of shear knives, die blocks, and forgings, has appointed the following representatives: Nicholas J. Frederick, Bourse building, Philadelphia; Otto Roehr, 1344 McCausland avenue, St. Louis; C. A. Palmgren, 8389 South Chicago avenue, Chicago, and J. E. Stenger, 14425 Dexmore road, Shaker Heights, Cleveland.

♦ ♦ ♦

Unit Corp. of America, Milwaukee, manufacturer of forgings gears and automotive and tractor accessories, in receivership since February, 1932, is reorganizing under a plan approved by the circuit court. Creditors will be in charge for six years and on payment of their claims of $275,000 ownership will revert to the stockholders. J. Seton Gray, receiver, will continue in charge.

♦ ♦ ♦

American Electric Furnace Co., 27 Von Hillern street, Boston, has appointed as direct factory representatives for sale of all its products the following: Anderson-Bolds Inc., 1836 Euclid avenue, Cleveland, for Ohio and western Pennsylvania; W. G. Nichol Co., 711 West Michigan street, Milwaukee for Wisconsin, except the western section; Northern Machinery & Supply Co., Lumber Exchange building, Minneapolis, for Minnesota and western Wisconsin.

♦ ♦ ♦

Lash Inc., San Francisco, prominent distiller, recently completed the construction of a new plant at Anaheim, Calif. Stainless steel was used throughout for the equipment. Stills, vacuum pans, evaporators, esters, reamers, deaerators, condensers, dephlemator, prewarmer, pasteurizers all were made of stainless steel manufactured by Allegheny Steel Co., Brackenridge, Pa.

Equipment

Pittsburgh—Carnegie Steel Co. has awarded contract to General Electric Co., Schenectady, N. Y., for $200,000 worth of small induction motors, auxiliary control panels and motor-generator sets for its 42-inch continuous hot-strip mill at McDonald, O. General Electric has also received an order for metalclad switchgear and smaller motors to operate auxiliary drives from Great Lakes Steel Corp., Detroit, totaling approximately $1,400,000. About 250 motors for the auxiliary drives will be built at General Electric's Erie, Pa., plant; switchgear will be made at the Philadelphia works, and the main drive motors, of continuous capacity totaling 39,000 horsepower, will be built at the Schenectady, N. Y., works. Although report was current last week that Carnegie Steel was about to award contract on its new plate mill development at Homestead works, no appropriation had formally been given by Steel corporation headquarters at New York. Westinghouse Electric & Mfg. Co., announced receipt last week of a contract valued at approximately $1,000,000 for motors, power supply and control units, and other equipment for Great Lakes Steel.

Chicago—A few orders for equipment are noted, but no purchasing of any size is discernible. Little equipment is going into toolrooms or for replacement of equipment growing obsolete. The demise of NRA is not expected to affect the outlook for tool sales materially. Most manufacturing industries are maintaining wage and hour rates set up under NRA. Small tool sales continue fair.

New York—A slight increase in machine tool buying is noted among industrial plants in the East with more orders for two or three units at time involving expenditures from $5000 to $10,000, and, in some instances slightly more. For its Lackawanna plant, Buffalo, the Bethlehem Steel Co. has bought several large machines, including two roll grinders. Goverment inquiry is steady and substantial, especially in the Philadelphia district. Shepard-Niles Crane & Hoist Corp. has been awarded contract for several electric bridge cranes for the Norfolk, Va., navy yard.

Seattle—Demand is well maintained in this area, most of it from public works sources but with increased call from private interests, particularly mining. Several large dredging outfits have been shipped recently to Alaska. Contract for cantilever cranes for the Coulee dam project, awarded to Colby Steel & Engineering Co., Seattle, involves considerable accessory equipment including gear reduction units, steel cable and motors.

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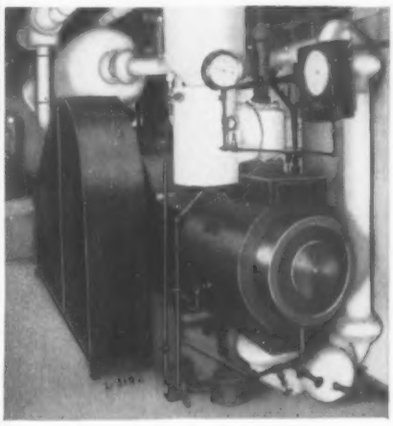

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Construction and Enterprise

Indiana

ELWOOD, IND.—It is reported that Continental Can Co. Inc. has purchased 16 vacant lots here adjoining the site on which a large plant now is being constructed. No definite announcement, however, has been made concerning the purpose to which this ground will be put.

KOKOMO, IND.—Crosley Radio Corp., Cincinnati, Lewis M. Crosley vice president and general manager, plans to open a branch refrigerator manufacturing plant here, in factory buildings formerly occupied by the Dirigold Corp. Plans have been drawn to remodel the factory buildings.

WABASH, IND.—Wabash Foundry Co. plant here has been acquired by the Manchester Foundry Co., North Manchester, Ind. No definite announcement has been made as to the disposition of this plant.

WARSAW, IND.—Power King Tool Corp., 310 East Market street, has been incorporated by Theodore C. Frazer, 623 East Center street, Warsaw, and Harold R. Horrick, Charles Heacock, to manufacture and sell power tools, machines, mechanical and electrical devices and appliances.

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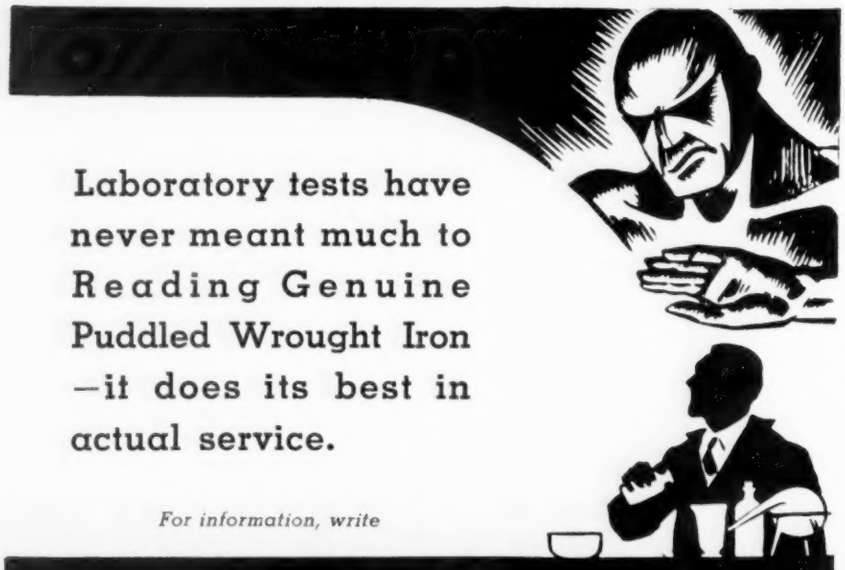

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Michigan

BATTLE CREEK, MICH.—Universal Machinery Co. has been incorporated with $30,000 capital to deal in mechanical equipment, by Carl M. Littlefield, 55 South McCamly street.

DETROIT—Rinshed Mason Co., 5935 Milford street, will erect an addition to its plant here.

DETROIT—Fisher Body Co., General Motors building, is placing contracts for conveyor equipment at its plants in Lansing and Pontiac, Mich., and Janesville, Wis.

DETROIT—Horst Mfg. Co., 17005 Fullerton avenue, has been incorporated to engage in machine and tool business, by Joseph E. Horst, 129 West Grand boulevard.

ISHPEMING, MICH.—Michigan Gold Mining Co. is building a machine shop addition, 25 x 30 feet, a dry house, 21 x 50 feet, and a compressor room, 14 x 20 feet, at the Michigan gold mine just west of this city.

LANSING, MICH.—John Bean Pump Co. is having private plans completed for construction of an addition to its plant.

SAGINAW, MICH.—United States Graphite Co. will erect a 1-story factory addition, 67 x 120 feet. Frantz & Spence, Saginaw, Mich., architects.

Pennsylvania

CORAOPOLIS, PA.—Refinery and cooperage shop of the Canfield Oil Co., Fourth avenue, were damaged by explosion and fire June 9.

ERIE, PA.—Work on construction of a new and modern freight house to replace the two Pennsylvania railroad freight houses damaged by fire June 1 will be started immediately. The new freight house, 100 x 800 feet, will be used for loading and unloading freight, and will be equipped with a sprinkler system. E. B. John is superintendent of the Renovo division. (Noted June 10.)

PITTSBURGH—United States engineer, will take bids July 6 for erection of a 75-kilowatt hydroelectric plant.

PITTSBURGH—Standard Sanitary & Mfg. Co. plant at 2801 Preble avenue, North side, idle for three years, will be reopened shortly. Operations will begin about Aug. 1.

New York

BROOKLYN, N. Y.,—Public works officer, navy yard, plans extension and improvements in electrical lines and system, costing $420,000, with equipment. Also will install motors and controls, electric hoists, conveyors and other equipment in proposed 1-story structural shop, estimated to cost $630,000. Appropriations are being arranged.

LARCHMONT, N. Y.—City is considering building a city-owned electric light and power plant in conjunction with its waterworks station. Estimated cost $530,000. Financing will be arranged through federal aid.

Maryland

BALTIMORE — Bismarck Brewing Co., 1838 North Patterson Park avenue, has been incorporated by Philip Peterson and Fred W. Weiss, to operate a brewery.

CURTIS BAY, BALTIMORE—Gulf Refining Co., L. R. Wolff, 1515 Locust street, Philadelphia, eastern

district supervisor of construction department, is reported to have tentative plans for establishing a refinery here. Definite construction details will be available soon.

HAGERSTOWN, MD.—City, I. M. Wertz mayor, has plans under way for sewer and storm water drainage projects at a cost of $125,000.

Ohio

CLEVELAND—Harris Calorific Co., 2828 Washington avenue, is planning to move to a new building.

Alabama

BIRMINGHAM, ALA.—Hill & Griffith Co., 2931 Seventh avenue, North, manufacturer of foundry supplies, is expending $75,000 for rebuilding its burned plant. (Noted April 29)

District of Columbia

WASHINGTON — Department of justice, bureau of prisons, is taking bids on power plant equipment for the United States penitentiary annex, Fort Leavenworth, Kansas.

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids June 18, schedule 5324, turret track turning machines, delivered Philadelphia; schedule 5291, motor-driven fresh water pumps and spare parts, delivered Puget Sound, Wash.

Georgia

SAVANNAH, GA.—Southern States Iron Roofing Co. is enlarging its steel barrel manufacturing department and is expending $40,000 for machinery and equipment.

Louisiana

MONROE, LA.—Bancroft Bag Co. is planning to install electric power equipment in its new 1-story addition to paper converting plant. Cost is estimated at $80,000. Herbert Dickard is consulting engineer.

NEW ORLEANS—New Orleans Alcohol Distilling Corp., Maritime building, is planning to install electric power equipment in its new plant on the waterfront where a group of four buildings will be remodeled and improved. Cost is estimated at $80,000. William O. Hudson is president. (Noted May 27.)

NEW ORLEANS—Great Southern Wirebound Box Co., Southport, La., plans installation of motors and controls, electric hoists, conveyors and other equipment in new plant addition for fiber container manufacture. Cost about $100,000.

Florida

DELAND, FLA.—City council is planning to erect a municipal electric light and power plant. Fund of $525,000 has been secured through PWA for new station, waterworks construction and municipal incinerator plant. Will ask bids in near future.

FORT MYERS, FLA.—Lee County Packing Co. plans installation of electric power equipment in connection with proposed rebuilding of citrus fruit packing plant recently damaged by fire. Cost over $60,000. John M. Dean is president. (Noted May 13).

LIVE OAK, FLA.—T. T. Scott has completed negotiations for acquiring 41,000 acres of timber land in Lee, Hendry and Collier counties, and plans to establish several mills.

TALLAHASSEE, FLA.—Florida state road department, C. B. Treadway, chairman J. H. Dowling state highway engineer, will take bids June 20, for 24 hydraulic hoists, of not less than 6000 pound lift capacity, complete with power takeoff ready to mount.

North Carolina

DURHAM, N. C.—City, R. W. Flack city manager, is planning to erect a water tank and tower in East Durham, N. C., with capacity of 1,500,000 gallons, and costing about $160,000.

WILMINGTON, N. C.—Carolina Terminal Inc., L. H. Martin secretary, P. O. Box 398, Greensboro, N. C., is erecting a marine terminal for petroleum products. Bids on pumps, motors, pipe valves, etc., are being taken. Cost is estimated at $54,000, including equipment.

South Carolina

CHARLESTON, S. C. — Public Works officer, navy yard, plans extensions and improvements in electrical distribution system at local yard, with installation of new equipment. Appropriation of $120,000 is being secured. Also will install motors and controls, hoists, conveyors, etc., in

(*Please turn to Page* 87)

THE STARTING POINT *of*

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COMPLETE control of all processing from selection of the melting charge to the finished condition is the N. F. & O. *guarantee of quality* in forgings furnished to your specifications—Smooth Forged, Hollow Bored, Rough or Finish Machined.

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Are Curtis Air Hoists rugged, efficient, adaptable and inexpensive to maintain? Let W. P. Sheehy, Maintenance Engineer of the B. F. Goodrich Company, give you the answer. He reports:

"For 15 years, Curtis Air Hoists have given us steady *trouble-free* service in a score of ways. Curtis construction is so simple, so sturdy that, if our work were concentrated, one man could handle the maintenance of our 150 Curtis Air Hoists.

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"Some of our Curtis Air Hoists operate at 10 second intervals, 24 hours a day, five days a week. In spite of this severe service our only maintenance expense is the oiling and renewal of leather cups and the usual repairs of stuffing boxes and valves after seven or eight months.

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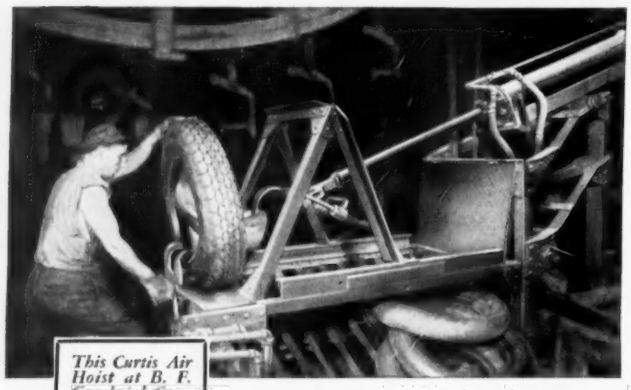
"The fact that, with air power, a load can be lifted or pushed or pulled with greater speed, and with power varied by a simple valve lever to suit the case, makes Curtis Air Hoists indispensable. The protective cushioning with which a load can be quickly dropped to the right point is also important."



This Curtis Air Hoist at B. F. Goodrich Company, performs 8,640 operations every 24 hours. Afterone million and a quarter such operations, requires only simple servicing.

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In thousands of industries, Curtis Air Hoists help to cut time and labor costs—speed up production. For plant operations that require push, pull, lift or lowering, Curtis Air Hoists do the job more quickly, efficiently and inexpensively. The complete report by W. P. Sheehy, Goodrich Maintenance Engineer, will be of vital interest to production executives. Write for your copy today.

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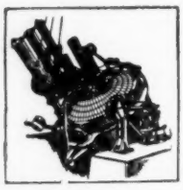

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The SIMONDS MANUFACTURING Co.
25th STREET — PITTSBURGH, PA.

(*Continued from Page* 85)

new sheet metal shop to cost $360,000, 1-story addition to structural shop to cost $97,000, and 1-story addition to pipe shop to cost $63,000. Bids will be asked soon.

MONTCLARE, S. C.—Boiler room and power plant of the Coxe Ingram Lumber Co. recently sustained severe damages by fire.

ORANGEBURG, S. C. — Cotton States Brewing Co. has been incorporated with $25,000 capital by A. E. Shonts and W. O. Baysinger, to operate a brewery.

Tennessee

CLEVELAND, TENN. — Brown Stove Works Inc. has been incorporated with $200,000 capital by Grover C. Brown and J. M. Carl. A tract of 15 acres has been acquired for erection of a plant, which will include a molding room, warehouse, pattern room, and cleaning and mounting room.

COAL CREEK, TENN.—City has voted $45,000 bonds for construction of sewerage system. Plans have been prepared and work will start soon. J. M. Cox mayor.

COOKEVILLE, TENN. — PWA has approved plans for an $88,000 sewer extension. Jess Owens, clerk, will open bids July 9.

Virginia

LEXINGTON, VA.—Town is considering installing an auxiliary water supply unit.

NORFOLK, VA. — City Manager Thompson has been authorized by the city council to apply to PWA for $937,000 to be used in constructing sewage systems in various districts.

NORFOLK, VA.—Public works officer, navy yard, is securing an appropriation of $420,000, for extensions and improvements in electric lines and system at local navy yard. Motors and controls, electric hoists, conveyors and other equipment will be installed in proposed addition to foundry, for which fund of $180,000 is being arranged. Bids will be called soon.

Missouri

CANTON, MO.—Maj. R. A. Wheeler, district United States government engineer, Clock Tower, Rock Island, Ill., will receive bids until June 21 for two traveling tainter gate hoists for lock and dam No. 20 in the Mississippi river.

KANSAS CITY, MO. — Harding Cream Co., L. P. McCoun manager, 2327 West Penway, is planning to erect a plant. Cost is estimated at $35,000, exclusive of machinery.

MAPLEWOOD, MO. — Sunnen Products Co., manufacturer of automotive shop equipment, is erecting a 2-story addition to its plant at 7909 Manchester road.

ST. LOUIS—Gilbert Brass Foundry Co., 4069 Park avenue, has acquired a 1-story building at 5036 Farlin avenue for expansion purposes.

ST. LOUIS—Curtis Mfg. Co. has acquired a tract adjacent to its plant. While no definite announcement has been made, it is understood that an additional building will be erected to care for expanding business.

Arkansas

BRINKLEY, ARK.—Issuance of a work order for construction of a $41,000 sewer system here has been authorized by the Arkansas PWA officials at Little Rock, and construction will start within the next few weeks. General contract is held by L. O. Brayton Co., Deyersburg, Tenn.

LITTLE ROCK, ARK. — College board of trustees, Arkansas State college, has awarded contract to Gamble Construction Co., St. Louis, for construction of four buildings, including power plant and engineering hall.

Oklahoma

FREDERICK, OKLA.—City has voted $100,000 bonds for constructing a power plant.

Texas

AMARILLO, TEX.—Hunsley Paint Mfg. Co., W. E. Hunsley secretary, has acquired a factory building and will expend about $17,000 for equipment.

BROWNSVILLE, TEX. — T. J. Donoghue, vice president, Texas Co., Houston, Tex.; J. S. Leach, Houston, and P. C. Sculin, Port Arthur, Tex., will soon begin work on a $50,000 water front oil terminal. A 50,000-barrel storage oil tank will be erected.

(*Please turn to Page* 89)

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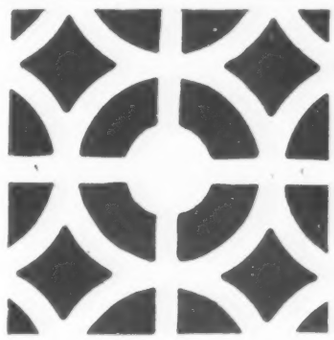

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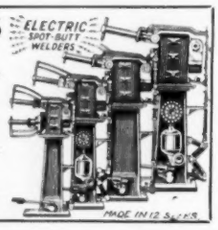

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(*Concluded from Page* 87)

and loading and conveying equipment installed.

KENNEDY, TEX. — Ernest and Albert Esse are erecting a steel gin plant which will be operated as the El Oso Gin Co. Modern equipment will be installed.

LUFKIN, TEX.—Mosher Steel Co., 3910 Washington street, Houston, Tex., has contract and has started work on a $50,000 expansion program for Lufkin Foundry & Machine Co.

MCALLEN, TEX.—Dado Refining Co., headed by Ralph Fair, plans installation of power equipment in connection with proposed expansion to double present capacity, including pumping machinery and accessories, tanks, etc. Cost over $70,000.

Wisconsin

MILWAUKEE — Pittsburgh Plate Glass Co., Grant building, Pittsburgh, has announced appropriation of $300,000 for improvements and addition to paint and varnish division here. Replacements and new machinery will cost $160,000. E. D. Griffin is general division manager.

MILWAUKEE — Harnischfeger Corp. has let contract to Klug & Smith Co. for removing and rebuilding electric hoist shop building, 60 x 200 feet, from old Milwaukee Crane & Hoist Co. location on Greenfield avenue, West Allis, Wis., to main works at 4411 West National avenue.

OSHKOSH, WIS. — Wisconsin Axle Co., 571 High street, affiliate of Timken-Detroit Axle Co., has under construction a 1-story shop addition, 65 x 134 feet, for extending heavy duty motor truck axle facilities. Electric power equipment will be installed. Cost is estimated over $35,000.

Minnesota

FAIRMONT, MINN.—Fairmont Canning Co. has started construction of a canning factory, and will install new machinery and equipment.

MINNEAPOLIS — Universal Fence Co., manufacturer of Tufco brand chain link galvanized wire fence, has moved from 2707 Lyndale avenue, South, to larger quarters at 3140 Snelling avenue, where the company now has over 8000 square feet of manufacturing space.

ST. PAUL — Northwestern Blaugas Co., 791 Hampden avenue, has been incorporated to manufacture compressed gas, by C. H. Biorn, A. M. P. Cowley, James B. Forrest and H. S. Lamberton.

ST. PAUL—Twin City Lumber & Shingle Co., Midway district, plans installation of electric power equipment in connection with proposed rebuilding of portion of mill recently damaged by fire.

THIEF RIVER FALLS, MINN. — Common council is planning installation of additional equipment in municipal electric light and power plant for increased capacity. Cost about $60,000. P. G. Pederson is city clerk.

North Dakota

GRAND FORKS, N. DAK. — North Dakota state industrial commission will soon take bids for construction of a 2-story warehouse and commercial feed plant, 26 x 378 feet, to cost about $40,000, and will include considerable new machinery and equipment. Joseph Bell DeRemer is architect.

WAHPETON, N. DAK.—Alex Stockman has awarded contract for construction of a 1-story blacksmith and machine shop, 30 x 50 feet.

Iowa

ACKLEY, IOWA—Marshall Canning Co. plans construction of a 1-story canning factory addition, 20 x 65 feet.

STORM LAKE, IOWA—Storm Lake Packing Co. has awarded contract for construction of a packing plant, 90 x 120 feet, to cost about $60,000.

STORM LAKE, IOWA—City will receive bids until June 24 for construction of a water treatment plant, to cost about $60,000 including iron removal and water softening plant, pump and motors, filter equipment, chemical feeders and cast iron water main extension. G. S. Robinson is city clerk.

WATERLOO, IOWA — J. J. Meany Casket Co. has been incorporated with a capital stock of $300,000 to manufacture caskets and burial vaults, by J. J. Meany, president and treasurer, and James W. Wood, vice president and secretary.

Montana

SHELBY, MONT. — Klingers Safety Coil Inc. has been incorporated with capital stock of $60,000, to manufacture automobile accessories and parts, by R. G. Klinger, W. F. Burns, P. J. Shea and A. H. Olson.

TWIN BRIDGES, MONT. — Mammouth Mines Corp., E. R. Pulver, president, plans construction of a 250-ton ore reduction mill and a tunnel, to cost about $150,000.

New Mexico

ZUNI, N. MEX.—Office of Indian affairs, department of interior, Washington, plans new electric power plant at Zuni Indian agency. Appropriation of $30,000 has been arranged. Bids will be asked soon.

Utah

SALT LAKE CITY, UTAH—Reilley Brewing Co., C. H. Reilley president, 1221 East Seventh street, plans installation of electric power equipment in proposed new multi-story brewing plant. Entire project is reported to cost about $200,000.

Pacific Coast

LOS ANGELES—Gaffers & Sattler Co., 4561 East Fifteenth street, is planning to add an $80,000 unit to its plant, which will give it an area of 120,240 square feet.

STOCKTON, CALIF.—Goodyear Tire & Rubber Co. of Calif., 6701 South Central street, Los Angeles, has leased a site at El Dorado street here for construction of a new plant.

SHERIDAN, OREG.—Plant of the F. S. Yorks Lumber Co. was damaged by fire June 5, including considerable damage to equipment.

CAMAS, WASH. — A. E. Fitzgerald has plans prepared for a fireproof canning plant, expected to be completed by July 15.

OROVILLE, WASH.—Earl Fruit Co. plans construction of a cold storage plant at Ellisforde, Wash.

PORT ORCHARD, WASH.—Silver Springs Brewing Co., Bay street, plans installation of electric power equipment in connection with extensions and improvements in brewery, including new mechanical bottling works. Cost about $55,000.

SEATTLE, Hoard Engineering Co., 6740 Fox street, has the contract for remodeling and rebuilding the former Ford plant here, recently acquired by W. P. Fuller & Co., Second and Jackson streets, for factory and warehouse purposes.

SPOKANE — General Petroleum Co. plans expending $50,000 for additional service stations and new tanks, to increase local storage capacity by 30 per cent.

Dominion of Canada

BRANTFORD, ONT.—Canadian Durex Abrasives Ltd. is enlarging its plant at a cost of between $100,000 and $125,000.

SHERBROOKE, QUE. — Dominion Textile Co. Ltd., Montreal, will install a rayon weaving unit here.

Works Program Applications

The following are applications filed with the division of applications and information of the President's work relief program, in Washington, for allotment of funds. An application does not necessarily indicate the program will mature:

New Jersey

DOVER, N. J. — Reconditioning power plant, storage warehouse and shop at Picatinny arsenal, $920,246.

New York

BROOKLYN, N. Y.—Construction of marine shops and incinerator at New York general depot, $176,375.

BROOKLYN, N. Y.—Construction of motor park shops at Fort Hamilton, $360,400.

PLATTSBURG, N. Y.—Construction of utility shop, $26,317; motorization housing shops, including gas and oil storage, $87,867.

WATERTOWN, N. Y.—Erection of garage and shops, $70,000; Q. M. garage and shops, $50,000.

WHITESTONE, L. I.—Construction of shops and heating plant, $233,000.

Pacific Coast

LONG BEACH, CALIF.—Installation of pumping plant, $216,000.

KEYPORT, WASH.—Construction of plating and polishing shop, $32,000.

CLEARWATER, WASH.—Erection of power house at Destruction Island, $10,000.

Pennsylvania

PHILADELPHIA—Addition to machine shop building, and accessories, navy yard, $432,000.

CARLISLE, PA.—Construction of sewer and water system, and electric system, $255,270.

Virginia

ALEXANDRIA, VA.—Construction of sewage disposal plant, $101,900.

Hawaii

HONOLULU—Erection of industrial shop building and accessories, including sheet metal, boiler, forge electric and copper shops, $1,400,000.

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